

# THE DOCK & HARBOUR AUTHORITY

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## *Editorial*

### *The Port of Antwerp.*

The Port of Antwerp, which is situated on the right bank of the River Scheldt at a distance of about 55 miles from the sea, is the chief port of Belgium, and its position as one of the principal ports of the world is mainly due to its favourable geographical situation, which enables it to carry on a vast trans-shipping trade with the countries of Central and Western Europe.

The Port of Antwerp is a vast network of maritime docks and barge docks, all of which inter-communicate by means of locks; there is also a large canal dock to which the maritime docks and barge docks are connected.

The maritime docks at Antwerp are eighteen in number, and have collectively an area of about 750 acres and a total mooring length of 20 miles.

The first dock to be constructed in the Port of Antwerp was the Bonaparte Dock, and this was completed in 1811, since which date docks have been constructed at various intervals to keep pace with the steady increase in shipping. The latest maritime docks to be constructed are known as Docks Nos. 1, 2, 3 and 4, the latter dock being completed as recently as 1932.

In addition to the above-mentioned maritime docks, the Port of Antwerp also has available five barge docks, which are utilised entirely for interior navigation. The largest of these five docks is known as the Loobroeck Dock, and has a length of 1,472 ft. and a width of 131 ft. The other four barge docks are known as the Coal Dock, the Barge Dock, the Brick Dock and the Refuge Dock.

Ship repairing, naturally, is one of the great industries of this Belgium port, and for this purpose ten dry docks have been constructed, nine of which are located in the Kattendijk Dock, which is situated in the southern part of the port. The last three docks to be constructed were completed in 1930. The tenth dock, that known as dry dock No. 7, opens into the Lefebvre Dock and was opened in 1920. There are also two private dry docks in the port, which were completed in 1930.

The quantity and assortment of appliances which the Port of Antwerp has available for loading and unloading vessels is of a vast nature and comprises:—Twenty-four pneumatic grain elevators with a trans-shipping capacity of from 200 to 300 tons per hour; 636 various hoisting appliances, comprising four electric transporter bridges of 15 tons; floating, electric and hydraulic cranes of various capacities up to 150 tons. For storage purposes there are 279 oil and petrol tanks with a total storage capacity of 14,525,000 cub. ft.; and 160 acres of sheds, besides numerous warehouses and stores. The largest warehouse in the Port is known as the Royal Warehouse, which has a storage capacity of approximately 100,000 tons, and a storage surface of 678,000 sq. ft.

The Port of Antwerp is connected by a dense net of rivers and canals with its hinterland, and it also has railway connection with all the commercial and industrial centres of Western and Central Europe. There are 500 miles of railroads laid out on the quays alongside the rivers and docks at Antwerp, and these permit discharging and loading directly from the ship and into trucks or *vice versa*.

The history of the Port of Antwerp has been one of continual progression, and the various undertakings which have been carried out at different periods have always been rewarded by steady increases in shipping and traffic, but in common with other world ports, Antwerp has also felt the effects of the depression in recent years by a slight falling off in shipping. The peak year as regards shipping and tonnage in Antwerp was

1929, when 11,582 ships entered the Port with a tonnage of 24,325,103, but this figure had decreased in 1933 to 9,841 ships with a tonnage of 20,439,195 which, however, showed a slight increase on the shipping figures for 1932.

Imports and exports for the year 1933 showed a considerable increase over those for 1932. Imports amounted to 10,038,102 tons in 1933, this being an increase of 713,020 tons over those of 1932. Exports for 1933 totalled 8,898,772 tons, an increase of 840,645 tons, as compared with 1932. The increase of imports and exports in 1933 was therefore 1,553,665 tons.

A point of interest with regard to goods traffic at Antwerp is the very high export figure in proportion to the import figures, the percentage of exports compared with imports for 1933 being 89 per cent.

The Port of Antwerp forms the supplement for this month's issue, and an illustrated article giving complete details of the Port appears on another page.

### *Fleetwood Dock Electrification.*

An important dock electrification scheme is about to be carried out by the L.M.S. Railway Company at Fleetwood at a cost of over £85,000.

The two main features of the scheme are the provision of electrical belt conveyors for coaling trawlers, and the conversion of the whole of the existing hydraulic plant at the port to electric power. In addition, siding accommodation will be constructed to take an extra 621 wagons. The six electrically-operated coaling conveyors will be equipped to deal with wagons up to 20 tons, and three will be installed in the Wyre Dock and three in the Fish Dock. The scheme will mean the complete modernisation of the craning facilities of the port.

The conversion of equipment to electric power also includes plant in the marine shops, Wyre Dock, level-crossing gates, lifts at Fleetwood passenger station, and all capstans for the movements of wagons.

The scope of the scheme involves practically the complete reconstruction of wooden piers at the north end of the dock, where Isle of Man traffic is dealt with.

### *Improvements to Whampoa Harbour, China.*

Plans were made, five years ago, for improving the old harbour of Whampoa, formerly the anchorage of the old clippers, into an up-to-date port. The first stage of the plan has now been completed, and Whampoa is reckoned as a third-class harbour. Later, it is intended to carry out further improvements, with a view to making the harbour practicable for ocean-going vessels. The Canton-Yuethan railway is to be extended into the harbour zone. The piles for the construction of a quay of nearly one mile in length have been sunk. When these improvements have been completed, and additional store-houses and unloading facilities have been provided, it will be possible to dispatch goods direct to Hankow via this port. Finally, the construction of a dry dock is under consideration.

It is, however, improbable that Whampoa will be in a position to compete with Hongkong, since the water route to Hankow via Shanghai and the Yangtse is far cheaper than the long railway route from Whampoa. It is also uncertain whether there will be room for large ocean-going liners to manœuvre in the narrow approach channel at Whampoa. The harbour of Hongkong possesses many facilities, which it will be impossible to provide at the new port for a number of years.

## Port of Southampton Topics

### More Vessels to call at Southampton.

**S**OUTHAMPTON received a welcome New Year's "present" in the form of an intimation from the Compagnie Generale Transatlantique to the effect that, as from February 25th, the vessels engaged on their West Indies, Trinidad, Spanish Main and Panama service, will call at Southampton instead of Plymouth on their outward voyages.

This news is gratifying, following as it does so closely on the decision of the C.G.T. to substitute Southampton from Plymouth as the west-bound port of call for their service to New York. It means that within the space of a month the port has gained two new services of a highly important character.

Moreover, the advent of the ships which will be engaged on the Company's West Indies and Central America service will give Southampton her first regular connection with the West Indies since the Royal Mail Steam Packet Company discontinued the connection upwards of twenty years ago.

The new service will be a monthly one, and will be maintained by the well-known liners "Colombie" and "Cuba."

At the outset, it is the intention of the C.G.T. to send the vessels to Cowes Roads to embark passengers.

During the past two months there have been made a series of gratifying announcements which have encouraged the hope that 1935 will be a bumper year, as far as the Port of Southampton is concerned. Briefly, the developments foreshadowed are as follows:—

Holland-Africa Line to maintain regular monthly outward and homeward calls between the Continent and the Cape.

C.G.T.'s west-bound call by vessels on their Havre-New York service, beginning on January 30th.

Cunard White Star Line's decision to utilise Southampton as a port of call for their express cabin service by the "Georgic" and "Britannic," both homeward and outward bound between London and New York.

Hamburg-America Line's Far Eastern ships to inaugurate calls, beginning on February 27th, with the "Cordillera."

North German-Lloyd announcement of a resuscitated service to the Far East with the new liners "Scharnhorst" and "Gneisenau."

In addition, there have been gratifying developments in regard to Southampton as a cruising centre.

### Decreases in Docks Statistics for December.

Despite the fact that December proved a very quiet month for shipping, as far as Southampton Docks was concerned, the returns for the past year were highly satisfactory, as stated last month. The concluding months of the year are usually rather slack, this being largely due to the number of big ships laid up for overhaul. December, 1934, however, brought other difficulties, and these, combined with the overhaul period, led to a noticeable drop in traffic.

In view of the announcements concerning new services which are to utilise the port, however, it may be taken for granted

that the check recorded in the present set of returns is of a purely temporary character.

During December, 1934, the number of vessels inward was 186, as compared with 209, and outward 188, as against 204—decreases of 23 and 16 vessels respectively.

Tonnage also fell. The inward gross tonnage amounted to 884,845 tons, and outward to 955,241 tons. These figures have to be contrasted with 1,196,491 tons and 1,205,555 tons respectively, so that the loss was 301,646 tons inward and 250,271 tons outward. The net statistics were in proportion, a decrease of 135,069 tons inward, and 106,353 tons outward being recorded. The inward net tonnage for the month was 490,361 tons, contrasted with 625,430 tons in December, 1933, and outward 536,011 tons, as against 642,364 tons.

There were special reasons to account for the decrease of 4,795 tons in imports and 6,364 tons in exports. The inward freight amounted to 40,272 tons and outward to 24,161 tons, as compared with 45,067 tons and 30,525 tons respectively. Inward passengers declined by 358, the figure falling from 7,231 to 6,873, whilst outward travellers declined by 513, the return being 9,177, as compared with 9,690.

### Large Number of Cruises from Southampton in 1935.

Southampton Docks is "all out" for yet another record. The recently-compiled list of cruises for 1935 shows that approximately 43 per cent. of these cruises will start from this port.

Among the many important lines which will operate from Southampton is the P. and O. Company. Following the success of the 1934 programme from this port, the Company will increase the number to 18 trips, whilst the Royal Mail Lines will run 17 trips.

Two companies new to the port will participate in the 1935 cruise programme from Southampton. They are Messrs. Lamport and Holt, and the Swedish-America Line.

During 1934 no fewer than 80,564 cruise passengers were dealt with at Southampton Docks. Ninety cruises commenced from the port, 85 terminated here, and on nine cruises Southampton was used as a port of call.

The figures quoted include the week-end and mid-week cruises arranged by the Southern Railway, by which 6,732 passengers were conveyed.

### Holland-Africa Line to run Monthly Service from Southampton

The Holland-Africa Line, who are building up a fine service between Europe and the Cape, have indicated their decision to organise a monthly service from Southampton.

The vessels are already making a homeward call here, and the prospect of a both-ways' service is yet another indication that the wishes for a prosperous New Year may be fulfilled.

Meanwhile, the "Cap Arcona," which is to make a series of special trips from Southampton, with a return call at this port, is being prepared for this work at Hamburg, where she is being overhauled.

## Correspondence

To the Editor of "The Dock and Harbour Authority."

8th January, 1935.

Dear Sir,

My attention has been drawn to an article in your issue for October, 1934, in connection with the Clyde Navigation Trust, in which somewhat pointed comparisons were made between the respective Ports of Glasgow and Southampton, so far as South African Fruit Imports are concerned.

May I claim the courtesy of your columns for a brief reply, on behalf of the latter port.

A glance at the map of Great Britain will do more than pages of special pleading to point out the obvious advantages of Southampton as a port for South African imports. It is the southernmost port in the Kingdom, and, as such, naturally involves the shortest sea journey from South Africa. In addition to this, it is situated in the centre of an enormously populated area, and actually serves over 21 million people within a radius of 125 miles. It is only 78 miles from the London markets, and railway lines run direct from the quayside, linking up with the main-line systems of the British railways, so that fruit and other imports are dispatched to the Metropolitan and other principal markets by express trains direct from the docks in time for the early sales on the following morning.

Southampton Docks also have the unique feature of double tides, which enable ships to berth at any time during the day or night. South African growers and producers are shrewd business men, and they realise the advantages of using a port

which can give them such service as is being provided day and night by Southampton.

Mr. Ford, of the Clyde Trust, spoke of the folly of wasting 2s. per case in attempting to feed Glasgow markets from Southampton. May I mention, in this connection, that Glasgow is 500 miles away from Southampton, and it scarcely needs to be pointed out that cargoes unloaded at Southampton can reach even the Glasgow markets by rail much more quickly than by sea, so that the interested parties have the advantage of earlier delivery.

Another point of advantage to South African fruit growers is the fact that Southampton, by its geographical situation, is also a very important distributing centre for the produce consigned to the Continental markets. This forms no inconsiderable proportion of South African exports. There are regular daily services from Southampton to the French ports, while through Hamburg and Bremen, Germany, Switzerland and Czecho-Slovakia are reached, traffic for Holland and Belgium being dispatched via Rotterdam, Amsterdam and Antwerp.

To sum up, South African growers, producers and shippers use Southampton, and will continue to use Southampton, because they desire to get their goods on the British and Continental markets at the earliest possible moment, and they realise that Southampton's position, its facilities for rapid handling, its rail connections, the immense population it serves, render it by far the most suitable port of entry to Great Britain, and is indeed the "Gateway to British Markets."

Yours faithfully,

Southern Railway,  
General Manager's Office,  
Waterloo Station, S.E.1.

C. GASEMANN.

## North-East Coast Notes

**T**HE year 1935 has commenced in a very hopeful mood on the North-East Coast, for practically all the reports on trade at the end of 1934 showed improvement. Tyne coal shipments were up on the previous year by about one million tons. Blyth, with 6,391,791 tons, established a new record, while Hartlepool was able to point to two records in 1934, a record day's shipment on May 7th, with 19,950 tons, and a week's record in the period ended December 1st, with 90,167 tons. So there is some justification for the present-day optimism, especially as many industries other than coal give definite indications of improvement, and particularly may be mentioned shipbuilding and ship repairing in the district.

Two clauses in the Parliamentary Bills which the Newcastle Corporation are promoting caused much discussion in the area. They were those which would have given the Corporation the right to do stevedoring work on their quay extension, and, secondly, that which would have enabled them to make a charge of 3d. per ton upon cargo discharged overside from ships into river craft. Both clauses met with strong opposition in commercial quarters, and at the town's meeting held at the end of December to consider the Bills, were successfully opposed, the Bill being approved with the deletion of the clauses. The question of taking a plebiscite on the matter was later considered, but rejected by the City Council early this year, so the proposal was definitely defeated.

### L.N.E.R.'s Improvement Scheme.

A scheme of improvement of the coal shipping appliances at Dunston staiths in the Tyne has been approved by the London and North-Eastern Railway Company's directors. The work will include the replacement of eight gravity spouts, four of which will be one foot longer, and the other four two feet longer than the existing spouts. They will be fitted with telescopic extensions to give a reach from 23 ft. 9 ins. to 25 ft. 9 ins. An experimental trapping device will be provided at No. 11 spout, and if it proves satisfactory three other spouts will be similarly equipped. Other new plant will include an anti-coal breaker at numbers 7 and 8 berths. The work is to be carried out as speedily as possible to help in increasing trade.

Tyne Dock, owned by the London and North-Eastern Railway Co., had another good year. Shipments of coal and coke were the biggest since 1930, while the general trade of the dock showed substantial improvement, compared with 1933. Exports, apart from coal, amounted to 83,535 tons, against 44,146 tons in the previous year, and imports amounted to 600,200 tons, against 455,934 tons. The coal and coke shipments for the past twelve months, compared with those of the previous year, were:—Coal, 2,300,188 tons, against 1,957,081 tons, an increase of 352,104 tons; coke, 70,782 tons, against 79,927 tons, a decrease of 9,145 tons; the net increase being 312,959 tons.

### Tyne Ship Repairing Scheme.

An important addition to the already extensive facilities for ship repairing on the Tyne is the reconstruction of Messrs. R. and W. Hawthorn, Leslie and Co.'s dock at Hebburn. The dock, constructed in the early 'seventies, was 430 ft. in length, 57 ft. 6 in. wide and 16 ft. 6 in. in depth. It has been enlarged to 503 ft. in length, 66 ft. in width and 23 ft. 6 in. in depth. A new pump-house with modern electric plant, supplied by Messrs. W. H. Allen, Sons and Co., Ltd., has been built near the entrance, and the dock, when occupied, can be pumped out in about two hours, and it is possible to dock a large vessel, put her on the blocks and have the repair started in about an hour. The dock gates are of the box type. A railway runs along each side of the dock with several cranes up to 21 tons lifting capacity, and every facility is provided to assist workmen in the docking and undocking of vessels. The engineers for the reconstruction scheme were Messrs. J. Watt Sandeman and Son, Newcastle, and the contractors Messrs. J. G. Thompson and Sons, Ltd., South Shields. The Tyne is exceedingly well equipped now, for there are twenty-seven dry docks and two pontoons, in addition to a number of slipways.

### River Wear Prospects.

Mr. J. E. Dawson, the Chairman of the River Wear Commission, addressing members of that body at the beginning of the year, spoke in a hopeful vein. He said, although coal shipments for 1934 were approximately four million tons, which was the smallest total since 1920 (with the exception of the strike years of 1921 and 1926), on the other hand, import and export figures other than coal showed some improvement; timber was up some 30,000 loads, and iron ore about 25,000 tons. There were now only nine laid-up vessels, against

seventeen a year ago, and twenty-four in 1932. There had been two outstanding features of the port during 1934. The Corporation's deep-water quay had been opened. It was a magnificent addition to the facilities and must eventually prove a great boon. Starting at it did without trade, it must necessarily be a long time before a reasonable amount of commerce could be gathered to it, but with persistent and patient effort it would prove to be a wonderful proposition. The other outstanding feature was the reconstruction of the Commission's finances, the beneficial effect of which would be immediate. The saving of interest on the second mortgage funded debt would amount to nearly £23,000 alone, and possibly other transactions might elevate the saving to £25,000. "One hesitates to embark on prophecies for 1935, because, inspired by natural hope, one has been so often wrong in one's predictions," said Mr. Dawson. "However, there is no disputing certain statistics which are now available, and it does look as though the tide had turned. I hope it may not be long before the flood reaches Sunderland and that a year hence there may be a much brighter review possible of our doings on Wearside during 1935."

A most interesting scheme prepared by the River Wear Commissioners for reclaiming the land at Hendon Banks and using the site for the storage of imported timber has been submitted to Mr. P. M. Stewart, the Special Areas Commissioner. It is estimated that the scheme would provide work for 350 men for six years. It is pointed out that if a site of sixty acres now covered by the sea could be reclaimed it would mean greater imports of pit props and other timber, with the result that props now stored abroad and sorted and handled by foreigners before being shipped to the Wear would be taken to Sunderland and handled by local labour.

The Commissioners' General Manager (Mr. F. Humble), in a memorandum to Mr. Stewart, states:—"The work would employ the maximum amount of labour which is possible on any ordinary scheme because, with the exception of the cement for making the concrete wall and the necessary plant, nothing has to be purchased, all gravel for concrete, filling, etc., being obtained locally by direct labour. A number of men could be started at once, and be constantly employed for at least six years, or, in proportionate numbers, according to the period allocated to the work. The reclaimed ground as it became available would provide employment for a number of men at present unemployed, and this would be a new source of employment for the district, not a transfer of work to Sunderland from some other English district.

"The expenditure on plant," Mr. Humble adds, "would be as follows:—First year: Hoppers, £12,000; pumping plant, £10,000; cranes, £5,000; timber staging, moulds, etc., £3,000—total, £30,000. Second to fifth year per annum: Replacements, timber, etc., £5,000. The cost of labour per annum would be £50,000 for the first five years and £41,000 during the sixth year. Taking an all-round figure of £140 per man per annum the number of men employed would have to be about 350."

### Port of Copenhagen.

The number of ships which entered the Port of Copenhagen during December, 1934, was as follows:—From inland ports 1,028 steam and motor ships arrived of 168,115 n.r.t., and 14 sailing vessels arrived of 1,914 n.r.t. Shipping arriving from foreign ports 659 steam and motor ships of 358,675 n.r.t., and 16 sailing vessels of 6,304 n.r.t.

The total of steam and motor ships and sailing vessels arriving from both inland and foreign ports amounted to 1,717 vessels of 535,038 n.r.t.

### The Industrial Value of Internal Combustion Engines.

Internal combustion engines can be employed with advantage wherever a compact and reliable power unit is required. They are self-contained and do not, of course, require any remote source of control or feeding arrangement, and they can be obtained with a variety of auxiliary equipment sufficient to cover the most comprehensive range of uses.

For these reasons, the number of power units in service is growing very rapidly, and we are informed by Morris Motors, Ltd., that their sales of industrial engines is increasing in all parts of the world.

The following are a few of the apparatus to which Morris engines are already adapted: arc welding, flood-lighting, paint spraying, automatic emergency lighting, pumping, winches, elevating platforms, works trucks, air compressors, generators, tractors, concrete mixers and cranes.

These engines can be obtained either to operate on petrol or on paraffin.

## Irish Harbour Matters

### Sligo

#### Sligo Harbour Board.

**M**R. H. CAMPBELL PERRY, on the occasion of his election for the eleventh year in succession as Chairman of the Sligo Harbour Commissioners, said that during the past year the total revenue for shipping was £10,126, an increase of £53; harbour dues £3,773, a decrease of £170; import dues £4,027, increase £41; export dues £1,080, increase £160. Sugar, which for many years had been one of their main sources of revenue, would, he said, almost cease to arrive after the beet sugar factories in the Free State were in full working order. In 1933, Sligo imported 4,680 tons of sugar, out of which the harbour received £750, and the dock labourers drew £1,500 in wages. While it was true that the shutting out of English flour had increased imports of wheat, there was nothing to replace the decline in maize with heavy loss in labourers' wages and harbour dues.

Competition by rail was growing in intensity, as many manufactured articles which formerly came to Sligo by coasting vessels, now came almost exclusively by rail from Dublin. In the long run, this policy was bound to affect Sligo and other small ports in the Free State.

In 1931-32, the Board spent £1,000 on a re-survey of the harbour, and in January, 1931, they forwarded the reports and plans to the Minister, applying for some financial assistance to carry out improvements, but they received a letter stating that the Minister decided that, in the present circumstances, he was unable to give them any grant.

Referring to the finances of the Board, Mr. Perry said that, at the end of 1929, the value of their investments was £20,930; to-day, this was £47,000, so that in the past five years they had more than doubled their capital.

### Dundalk

#### Dundalk Port.

At the New Year meeting of Dundalk Harbour Board, the Chairman (Mr. T. F. McGahon) stated that for the past nine months their imports had totalled 91,393 tons, as compared with 74,788 tons for the corresponding period of 1933. In addition, their imports for November, December and January had been very heavy, and the probability was that their total for the year would be considerably more than 120,000 tons.

Mr. C. P. Glendon drew attention to the larger quantity of timber being imported at other Irish ports and then being taken into the Irish Free State. Large cargoes of timber came to Newry and Belfast, and then came into the Free State. He suggested that Dundalk should make strenuous efforts to import the timber required for the big hinterland extending from Dundalk to the West along the border.

The Chairman said that if there was a chance of developing the trade in timber they would provide the necessary accommodation. There was a satisfactory increase in the imports of grain. Where formerly they only had an occasional grain boat coming to Dundalk, the imports now were really satisfactory.

At another meeting of the Dundalk Harbour Board, a complaint was received from four Gyles' Quay pilots stating that at midnight, on 27th December, they signalled to a coal boat that was coming up the bay, but that the captain took no notice, and went over the bar without a pilot. The pilots protested against this, and stated that they got no chance to board the vessel, and were claiming pilotage.

The Harbour Master stated that the vessel arrived in port without a pilot aboard, and the Captain reported that he considered the weather too rough for a pilot to board vessel.

The Chairman (Mr. McGahon) said that the allegation that the Captain demanded half the pilotage fees was a serious one. He was not entitled to any of the pilotage.

The Board decided to ask the Captain of the vessel for his remarks on the allegations of the pilots.

### Dublin

#### Dublin Port and Docks Board Election.

Vacancies created by eight retiring members of the Dublin Port and Docks Board resulted in quite an exciting election contest on January 8th. The retiring members of the Board all sought re-election as a party on the "Efficiency Ticket," while six new candidates went forward on the "Independent Business Ticket."

The retiring candidates, who were all re-elected, were:—Messrs. Walter Baird, Wm. Hewat, James B. Hollwey, James Ward, Hugh Kennedy, Thomas R. McCullagh, James Moran and Charles M. O'Kelly. The first four were shippers and the second four traders' representatives.

#### Chairman Re-elected. Review of Year.

At a meeting of the Dublin Port and Docks Board on 10th January, immediately after the election, Mr. T. E. Laurie, Managing Director of the Irish American Oil Co., was unanimously re-elected Chairman, and Mr. C. M. O'Kelly was unanimously re-elected Vice-Chairman.

Mr. T. E. Laurie, returning thanks for his re-election, said that during the past year there had been a considerable increase in the tonnage of vessels entering the port from foreign ports, and a comparatively small decrease in the tonnage of vessels entering the port from ports in Great Britain. It was with particular pleasure he could tell them that 1934 had set up a record for tonnage entering the port, with the monumental figure of 2,559,967 tons, an increase of 137,230 tons over the previous year.

The incidence of increase was as follows:—From foreign ports, 1,006,832 tons; increase 162,265 tons. From cross-Channel and coastwise ports, 1,463,135 tons; decrease, 25,035 tons; net increase, 137,230 tons.

The gross receipts of the port for the year showed an increase over 1933 of, in round figures, some £15,000, dues on vessels being some £5,000 in excess of 1933, and dues on goods showed £7,000 in excess over the same comparative period. In addition, the gross receipts from the Custom House docks and warehouses showed an increase of approximately £6,800.

"I am not in a position," continued the Chairman, "at this early stage to give you details of the incidence of expenditure, but I think I can with safety say that the surplus out of the year will be in the neighbourhood of £15,000, as against a surplus of £5,971 in 1933. This, I think, is highly satisfactory. However, I do not want you to feel that the port is in no need for caution in the matter of expenditure. The present position of the port as a first-class international port with a record second to none, has not been easily achieved. To-day's magnificent result has not been obtained in a day, or even a year, but represents the wise, skilful and careful management of the trust which the citizens of Dublin have imposed on the Board's members over a long period of years. It has been realised, through the foresight of my predecessors, men who have given ungrudgingly of their time, energy, and ability over long years of constructive development."

"Our duty to-day is to consolidate, strengthen, and whenever possible improve on the position gained. To maintain the strong financial position of the port so that we shall be welcome borrowers if and when we require loans from the public for such essential developments as will keep the port ahead of coming requirements of trade and shipping. But in our spending we must of necessity avoid placing a burden on our existing trade which that trade cannot stand."

"The Board was fully alive to the requirements of the port, and would not hesitate to expend money for improving its amenities. During 1934 they had made a handsome contribution towards that end. The engineering department had spent some 35 per cent. of their total revenue, and approximately £33,000 of borrowed money, and in so doing had on average some 450 men permanently. That expenditure covered amongst many other activities the following principal items:—

"Almost 1½ million tons of silt and mud were removed from the navigable waters and berthages."

"Twin bridges of the most modern type were completed and put into service over the entrance to George's Dock."

"The completion of the North Quay extension has been initiated and was now well under way."

"The Construction Wharf was completed and pressed into service for the vigorous prosecution of the lengthening of both the North Quay Extension and the Alexandra Quay."

"The lengthening of the North Quay Extension would, when completed, increase the berthage available for deep draughted vessels by 800 ft., whilst the lengthening of the Alexandra Quay would add another 100 ft. of berthage to the existing 1,414 ft., capable of taking any liners visiting Dublin. Important as these works are, they represented only a part of the Board's activities. Improved lighting of the navigable channel in accordance with the international system of buoyage was approaching completion."

"In connection with that major undertaking, the reclamation of land by depositing the dredgings from the Bar, we have spent considerable sums raising and protecting the retaining walls, whilst a caterpillar excavator crane has been purchased to facilitate the levelling and laying out of this projected industrial area, upon which they had so far been able to place one of the firms engaged in the new industry of assembling motor cars and motor lorries."

"The Custom House Docks," continued the Chairman, "possibly has engaged the attentions of all the members in a

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## Hull and the East Coast

### Improved Ferry across the Humber.

THE contract for the new floating pontoons and other works at the Victoria Pier at Hull, in connection with an improved ferry across the Humber, is expected to be let some time during February by the Hull Corporation, who are responsible for the works on the Yorkshire side. It is hoped to complete the job within twelve months. When the new scheme is in working order the embarking and disembarking of passengers, cattle, goods and motor cars will be greatly facilitated. All vehicles will proceed direct from the street on to the ferry steamer, the gradient not being more than one in twenty when the tide is at the lowest, and thus avoid the present unsatisfactory arrangement by which cars are slung by a crane from the pier to the deck of the boat and *vice versa*. On each side of the entrance will be ticket offices, and the footpaths on either side of the roadway or slipway will be covered in for the convenience of passengers on foot. The floating pontoons or landing stage will be connected with the carriage-way by a hinged platform. On the opposite side of the river, at new Holland, extensive improvements in the way of landing facilities are being undertaken by the London and North-Eastern Railway Company as their share in the scheme, besides the provision of two modern ferry steamers which have already been put into commission. Pending the construction of a road-bridge over the Humber or, alternatively, a tunnel (proposals which have by no means been abandoned) in the near or distant future, the vastly improved ferry service will supply a long-felt want and add greatly to the convenience of transport between the two counties. The cost of the land works will be around £100,000.

### Humber Conservancy Board Appointments.

The Hull and Goole Chambers of Commerce and the Railway Companies have re-appointed their present representatives on the Humber Conservancy Board. The Grimsby Chamber of Commerce have appointed Mr. C. W. Dixon and, a fresh appointment, Mr. E. M. Rutter, portmaster at Grimsby and Immingham, in place of Captain Mann. The constitution of the Board is now complete, with the exception of three representatives, to be appointed by the Ministry of Transport.

### Increase in Shipping at Hull Docks.

The shipping which entered the docks at Hull or berthed at the oil jetties in the river in 1934, aggregated 6,558,740 net registered tons, a modest increase of 37,322 tons over 1933. The old docks were represented by 2,314,640 tons, the Alexandra Dock by 1,419,641 tons, and King George Dock and Saltend Oil Jetties by 2,824,459 tons. The increase over 1932 was 425,296 tons. In comparison with 1913, when the King George Dock had not been brought into use, the figures for last year are still 133,073 tons behind.

### Coal Shipments from the Humber in 1934.

The coaling appliances on the Humber in 1934 were utilised to about the same extent as in the previous year. Altogether, between seven and eight million tons of coal was shipped. The exports (foreign) from the Humber Ports (Hull, Grimsby, Immingham and Goole) amounted to 3,285,628 tons, as compared with 3,254,200 tons (corrected) in 1933, and 3,335,891 tons in 1932, an increase of over 31,000 tons on the year. It is of interest to note, as showing the increasing use made of the splendid facilities at Immingham on the opposite bank of the river to Hull, that 50 per cent. of the total was exported from that port. The shipments of bunker coal amounted to around three million tons and coastwise shipments to one-and-a-quarter million tons, in each case approximately the same as in 1933. It is confidently hoped that 1935 will have a better showing as a result of the new arrangement of a separate allocation of coal for shipment purposes and a possible improvement in trade with Continental countries arising out of the Anglo-Polish agreement to abolish price-cutting. Humber coal exporters, however, feel that more is needed to restore the export trade in coal to the level of five and six years ago, when the exports exceeded six million tons annually, and were thus nearly double of those of each of the past two years. They still believe that a return to the scheme to provide a subsidy for export coal by means of a levy on all coal raised in the Midland area is not only practicable but desirable if the Humber is to overcome the high transport costs due to the long haul from the collieries to the ports.

### Smaller Imports of Wheat and Cereals at Hull.

The quantity of wheat and kindred cereals imported at Hull docks in 1934 was 1,255,404 tons, or 136,253 tons less than in 1933; and of oilseeds over 600,000 tons, or 65,000 tons more. The arrivals of timber (hewn and sawn) amounted to 1,181,027 loads, an increase of 85,861 loads, and the highest

total ever recorded in the history of the port, which thus fully maintained its position as the second largest soft-wood importing centre of the United Kingdom. From Russia alone 124 cargoes of timber were received, while increasingly large quantities of Canadian wood also came to hand. Imports of petroleum at the Saltend Oil Depot were 136 million gallons, or 19 million gallons less than in the previous year when a new record was established. Arrivals of sheep's wool were 40,920 tons, or 16,680 tons less than in 1933, and the lowest total for very many years.

### Revision of Rules for Barges on the River Trent.

The question of a revision of the rules relating to the tonnage of barges on the River Trent has been before the Humber Conservancy Commissioners, who have referred it to the Marine Committee. Sir Hickman B. Bacon, who raised the matter, said that the rules which were made twenty-four years ago were, to some extent, out of date and required revision. Barges were much larger than they used to be, and he thought that there should be some limit to the number a tug might tow. Relating an incident on the river which came under his personal observation, Sir Hickman said that it was quite wrong that one tug should be allowed to have so many as half-a-dozen large barges in tow in a narrow river like the Trent, and he thought that the number should be severely limited. Another suggestion, put forward by Mr. W. Minnitt Good, was that petrol barges, usually larger than those generally employed, should not be allowed to be mixed with ordinary vessels when in tow.

### River Trent Floods.

During the recent heavy rainfall the River Trent ran almost bank-high at full tide, and the engineers of the Trent Catchment Board, stationed at Gainsborough, patrolled the banks daily and observed certain points at which repairs were carried out last year. The Catchment Board have spent considerable sums of money in extending the capacity of the Trent at vital points, and in several cases the banks have been set further back and in others an additional bank has been erected, thus providing a double barrier. The bed of the river has also been deepened in places. Anxiety was felt, in view of the possibility of the heavy volume of water coming down from the upper reaches, of land in the vicinity of Gainsborough being flooded. A considerable trade is carried on between Hull, Gainsborough and Immingham via the Humber and Trent.

### Improvement Scheme at Whitby Commenced.

At Whitby (North Yorkshire) a commencement has been made with the dock-end improvement scheme, which includes the construction of a wall at the harbour front and a short length of sewer to take some of the water from Bagdale Beck.

## Irish Harbour Matters

(continued from opposite page)

greater measure than any other single subject. There we have made arrangements for the erection of a further modern and up-to-date warehouse for the storage of tobacco.

"This, when completed, will be the largest and best-equipped tobacco warehouse in the Saorstát, if not in the British Isles.

"To summarise, the Board has committed itself to an expenditure of, in round figures, some £155,000 on development works, some of which were carried out in the past year, and the remainder will be completed, I have every reason to hope, before the end of the present year. The chief items are:—

1. Reconstruction of George's Dock Bridge ...	£20,000
2. Extension of North Quay ... ..	30,000
3. Extension of Alexandra Quay ... ..	10,000
4. Two Portal Wharf Cranes for South Quays ...	7,000
5. Wharf for Reconstruction of Caissons ...	7,000
6. Relief Works, £8,900, less Government Grant, £2,000 ... ..	6,900
7. Retaining Wall for Dumping Ground and Reclamation ... ..	5,000
8. New Tobacco Warehouse ... ..	70,000
	<hr/>
	£155,900

"The year 1934 saw further large liners entering the port. The "Laurentic" (18,724 tons gross), 4 trips; "Lancastria" (16,243 tons), 2 trips, and the "Orduna" (15,507 tons), 2 trips, all visited the port and carried over five thousand pilgrims to Rome and Lourdes.

"It may be of interest to note the abnormal amount of timber which entered the port during 1934, being over 70 per cent. greater than 1933, and 125 per cent. greater than 1932."

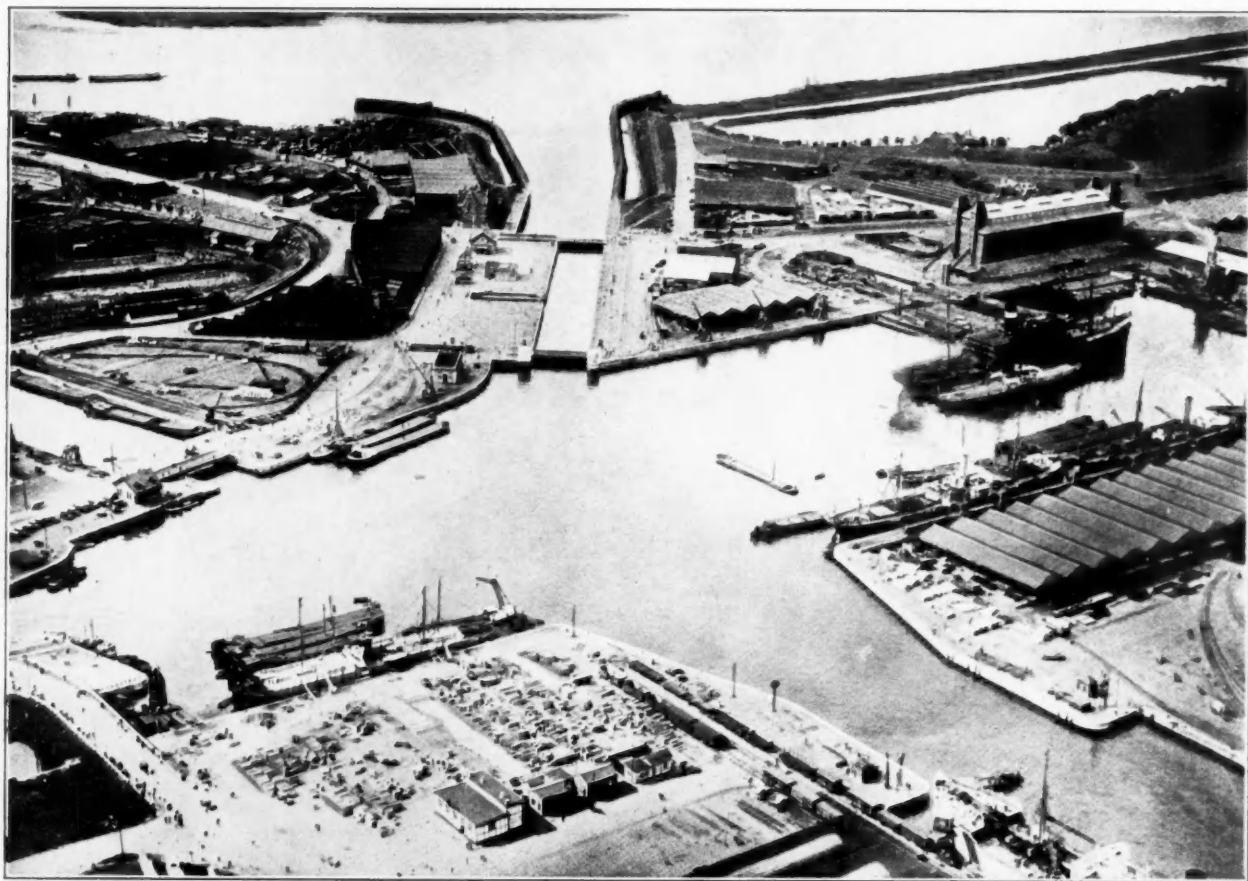
## Port of Antwerp



Photo]

[Stambe and Vertongen, Antwerp

*The Nine Dry-docks of the Kattendijk Dock. The picture shows the Nine Dry-docks in the Kattendijk Dock. The Three Dry-docks on the right of the picture were the last to be constructed and were opened in 1931.*



Photo]

[S.A.B.E.P.A., Brussels

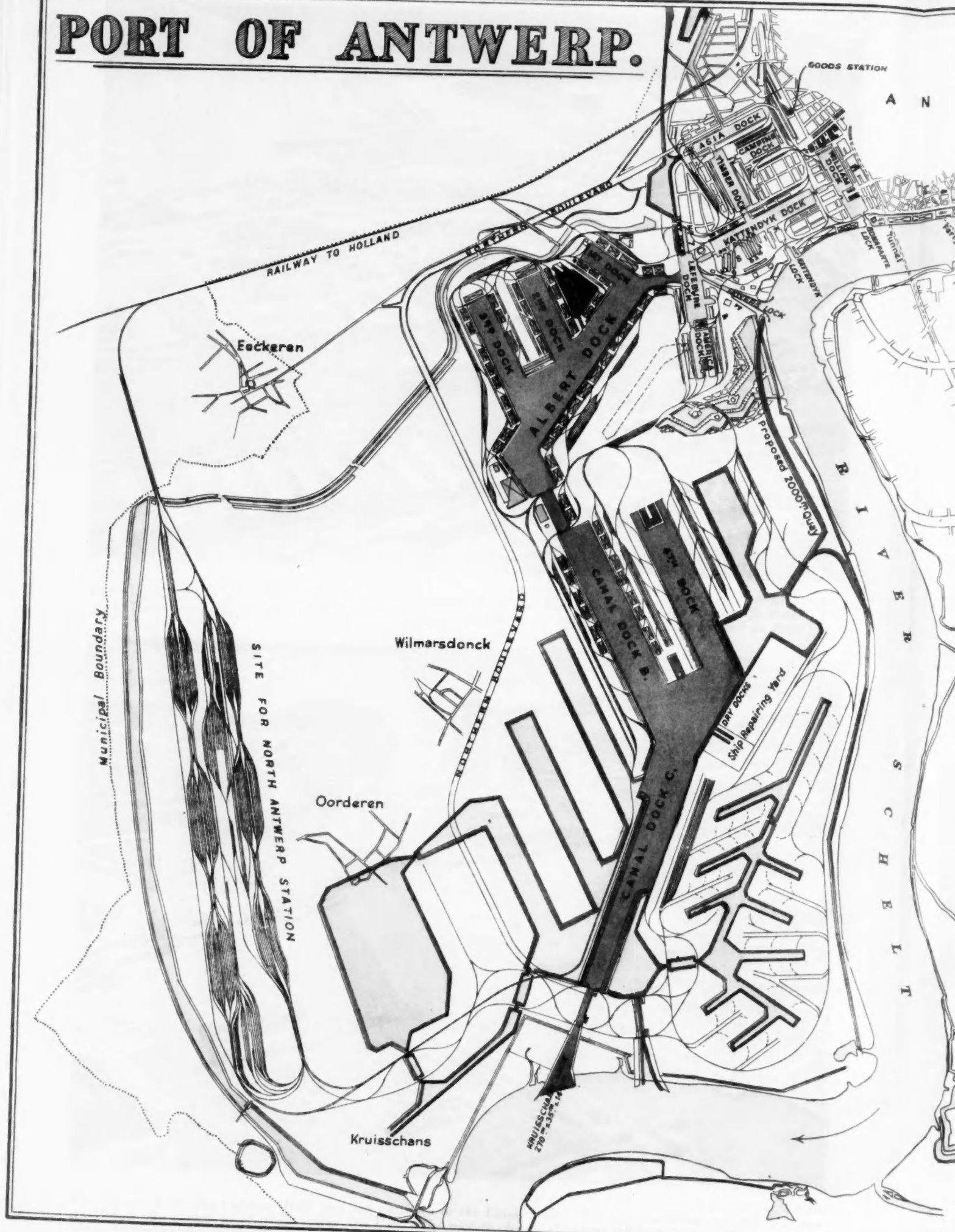
*The Royers Lock, the Lefebvre Dock and the Entrance to the Canal Dock. The Lefebvre Dock occupies the key position in the movement of traffic within the Port. The picture clearly shows its triple function. It gives access, above, to the Escaut, by the Royers Lock; on the left, to the first Canal Dock; on the left also, in the foreground, may be seen the Open Entrance to No. 7 Dry-dock. The Granary at the America Dock has an area of 27,000 square feet and a capacity of nearly one million bushels of grain.*

LIMA - COCA - THE COCA - LIMA

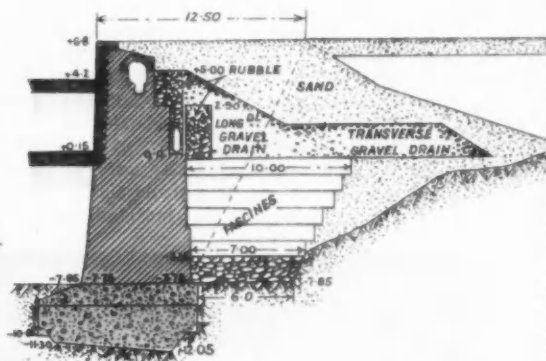
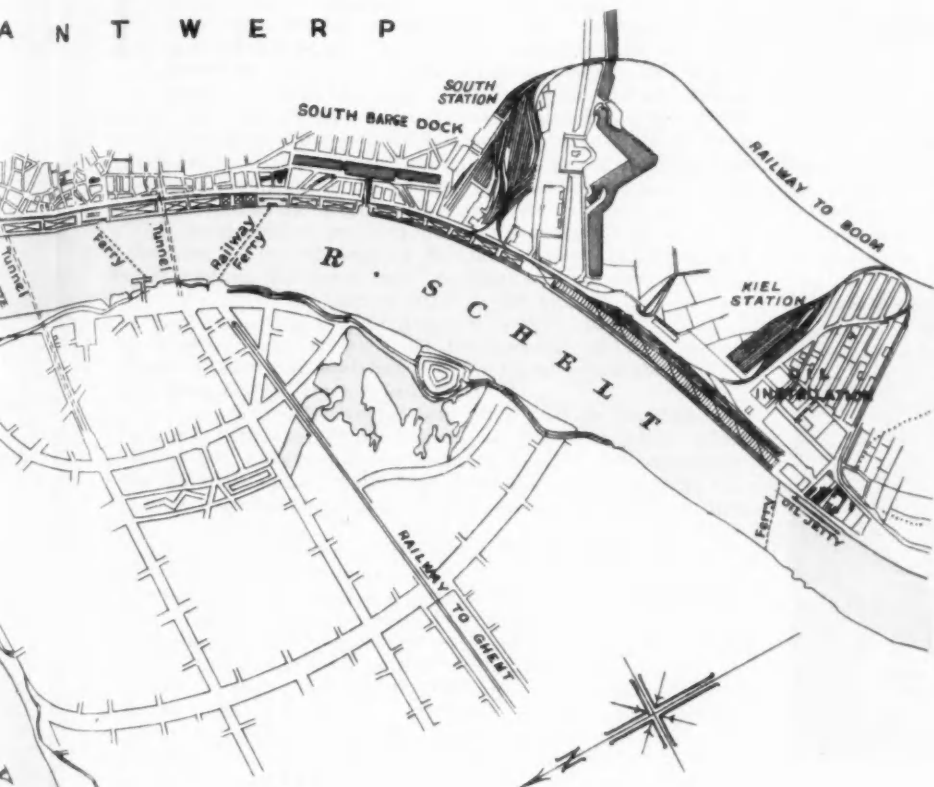
## FORT OF ANTIWEBA



# PORT OF ANTWERP.



A N T W E R P

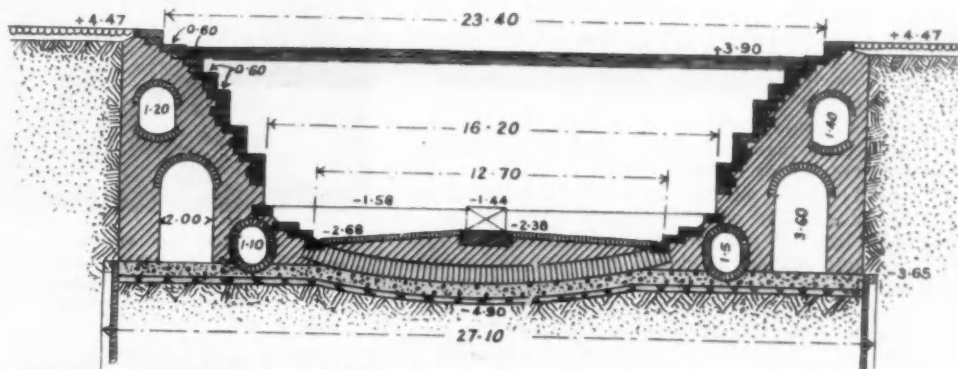


NEW QUAY WALL SECTION.

NOTE: - New Docks completed coloured D<sup>k</sup> Blue.  
Future Docks edged D<sup>k</sup> Blue.



CROSS SECTION OF NEW DOCK SHEDS.



CROSS SECTION OF DRY DOCKS NOS 4, 5 & 6 - KATTENDYK DOCK.

Scale for Plan.



etc + Harbour Authority Feb, 1935

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# PORT OF ANTWERP



## The Port of Antwerp, Belgium

### I—Historical Review

It is unknown at what time and of what origin the first men were who settled on the spot where subsequently the town of Antwerp rose up. It is possible that they were moved in their choice by the situation; indeed, the Scheldt was already a deep and wide river, navigable in all seasons of the year, and as, moreover, its mouth was joined by natural connections with those of the Rhine and the Meuse, and its basin with its tributaries comprised more than the half of Belgium, this situation offered them the easiest of communications as well with the sea and the neighbouring countries as with the interior.

This geographical position necessitated the construction of a fortress, to ensure security to commerce by both land and water, and at the same time to put beyond the reach of marauders the riches accumulated in the vicinity.

The origin of the City of Antwerp is very obscure.

It appears, however, that at the opening of the seventh century a colony of Low-Saxons was found established on the right bank of the River Scheldt.

The "werf" or "werp" was then but an earthen pier connected with the shore, forming a primitive wharf which supplied the early requirements of navigation and commerce. (The Flemish name "Antwerpen" means "on the wharf".)

The Bourg (borough) was pillaged during the Norman invasion (A.D. 837).

From this time onwards, the history of the town remains in darkness for a century and a half.

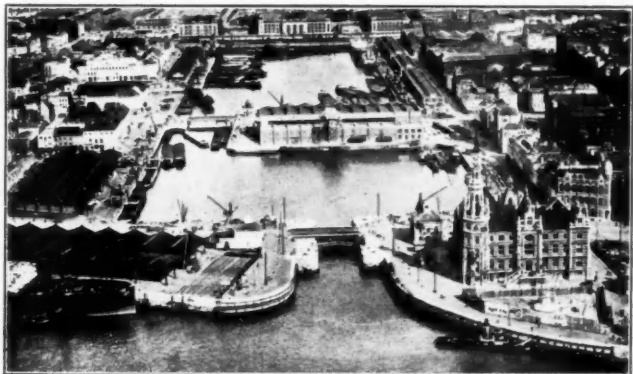
It appears to be about the tenth century and to the Emperor Otho the First that we should attribute the construction or reconstruction of the Borough of Antwerp with its walled enclosure as it appeared in the eleventh century.

Since the twelfth century the borough has continuously been growing, and with every extension of the boundaries the surrounding moats have been transformed into canals.

During the thirteenth century the enclosure around the borough was moved back on three different occasions, and after the last improvement Antwerp could be considered as a town. Commerce increased in importance, and, dating from 1318, the first Venetian galleys arrived at Antwerp. In 1324 relations were also established with Genoa, and these transactions continually increased in importance.

Although Antwerp was associated from 1315 with the Hanseatic League, its commerce about the fourteenth century underwent a certain stagnation. Louis de Male and Philippe-le-Hardi openly favoured Malines.

But the dukes of Burgundy, principally Philippe-le-Bon, protected the freedom of commerce, and in the fifteenth century trade progressed considerably, attaining its zenith towards the middle of the sixteenth century.



Photo] [Stampe and Vertongen, Antwerp  
**The Bonaparte Lock, giving access to the Bonaparte and William Docks, was opened in 1811. Its width is 18 m. (59 ft.) and its depth 6.80 m. (22 ft. 4 in.) at high water of mean tides.**

The severe regulations of the Hanseatic League and the continuous insurrections of the people of Bruges, contributed more to the removing of commerce from Bruges to Antwerp, than the silting-up of the Bay of Zwyn, which cut Bruges from the sea and obliged the ships of large tonnage to desert the latter city and sail up the River Scheldt to Antwerp. Finally, the headquarters of the Hanseatic League were transferred from Bruges to Antwerp, and this was the "coup de grâce" for the one time "Venice of the North."

The most prosperous and brilliant period when commerce and navigation showed unexpected progress was between 1500 and 1570. During this time most foreign nations established business houses and factories at Antwerp; the merchants, known as the "Hessois," constructed the "Maison de Hesse"

and in 1564 other German merchants erected the celebrated "Hanseatic House," which covered an area of more than 53,820 sq. ft. In the port, which then consisted of the roadstead, rudimentary quays and canals, there were, on some days, more than 2,000 ships, consisting of Venetian galleys, Genoese carracks and Spanish and Portuguese caravels.\*

But this great prosperity was very soon wrecked owing to religious and political quarrels, which gave rise to popular revolts and armed conflicts. The civil wars and international complications were disastrous to commerce. In 1585, after the capture of Antwerp by Farnese, Prince of Parma, the Scheldt was closed by the Batavian Provinces, which had become independent. This closing of the Scheldt was officially recognised in 1648 by the treaty of Munster.



Photo] [Stampe and Vertongen, Antwerp  
**South Antwerp Station. This station, for passengers and goods, covers 104 acres and has 30 miles of track. It serves the riverside wharves on the Escaut, Northward to the Pilotage (15 miles of track) and Southward (10 miles of track). The two stations—"South Antwerp" and "Antwerp Docks"—handle on an average a traffic of about 1,700,000 waggons annually.**

From this time until the Brabantine revolution the history of the town of Antwerp may be summed up in two words:—decadence and lethargy.

The treaty of The Hague, signed in 1795, after the French invasion, by rendering free the navigation of the Scheldt roused the dormant city from its long sleep.

Under French rule, the construction of the Jordaens and Van Dyck quays was begun, and the excavation of the two old basins, known at the present time as the Bonaparte and William basins.

After 1814, under the Government of the House of Orange, the Port of Antwerp progressed relatively with the market offered by the Dutch colonies. In 1815 there was a traffic of 3,000 vessels. In 1817 the first steamer arrived at Antwerp. The two docks were made over to the town, who fitted them out, and the construction of the quays then proceeded. In 1829 King William of the Netherlands laid the first stone of the Entrepôt Royal. (Bonded warehouse).

Subsequent to 1830, railways and canals were constructed connecting Antwerp with France and Germany, and the Municipal authorities commenced (north of the town) the construction of further facilities for navigation, viz.: the Kattendijk basin with a lock giving access to the Scheldt, the large dry dock No. 1 (1853-1860) and the Timber Dock (1864).

In 1850 the maritime traffic reached 240,000 tons, while those of Bremen and Rotterdam attained 345,000 tons, Le Havre 365,000, and Hamburg 550,000 tons.

The territory of the city was further extended in 1859, in 1910, in 1912, in 1922, and in 1928.

In 1870 traffic reached 1,300,000 tons, surpassing Rotterdam (1,030,000), Le Havre (1,200,000), and Bremen (700,000), and nearly reaching the level of Hamburg (1,400,000).

In 1869 the junction dock connecting the Kattendijk to the old docks was completed, and the Timber Dock (Bassin aux Bois) lengthened; in 1873 the Campine and Asia Docks were opened to navigation. At that moment Belgium had already constructed 1,240 miles of railways, and the Netherlands only 868 miles. Between 1877 and 1881 the City lengthened the Kattendijk Dock and constructed three new dry docks, as well as the barge dock to the North; in 1886 the Lefebvre and America Docks were completed.

\* It is perhaps not superfluous to remark that at that time a vessel of 200 tons was a big ship; the average tonnage was 25 to 30 tons.

### Port of Antwerp—continued

During the time that the Municipality of Antwerp was engaged in increasing the maritime installations, the State, to whom the River Scheldt belongs, improved the roadstead by demolishing the old quays and rectifying the right bank of the river.

Later, between 1895 and 1902, the Government extended the quays for more than one mile towards the South, where the town constructed the petroleum installations.

Notwithstanding these extensions in the port, the City was soon obliged to make further sacrifices to satisfy all the requirements of its commerce, and constructed the Roovers Lock and the new North Docks between 1903 and 1914.

Immediately after the war the realisation of a new extension-scheme, drawn up before the war, was resumed, and on August 31st, 1928, Their Majesties the King and Queen, returning from a journey through the Congo, solemnly inaugurated the new installations, viz., the Kruisschans Sluice, the prolonged Canal-Dock, having a length of over three miles, and the Junction Channel establishing the connection with the Canal-Dock of 1914.



Photo] [Stampe and Vertongen, Antwerp

**South Barge Docks.** The three barge docks are situated in the Southern part of the port. They communicate with the Escout by a lock 13 metres wide. The Coal Dock, the Barge Dock and the Brick Dock, have an aggregate area of 10 acres and a depth of 4.85m. (16-ft.). There is a fourth barge dock at Loobroek measuring 450 m. by 40 m. (1,476 ft. by 131 ft.) with a depth of 2.65 m. (8 ft. 8 in.).

From time to time as the accommodation for shipping was increased, the city authorities placed mechanical implements for the loading and unloading of merchandise at the disposal of commerce.

Prior to 1875 the appliances were few in number and were entirely manipulated by hand.

They consisted only of the following:—

- (1) One 40-ton crane at quay No. 22, East Kattendijk Quay, which was transformed in 1879, and worked since then by hydraulic pressure, till it was pulled down in 1926.
- (2) One 10-ton crane at No. 1, Bonaparte Dock, which has been pulled down.
- (3) One 15-ton crane at No. 21, Kattendijk Dock, which has also been pulled down.
- (4) One crane on the Jordaens Quay at "Kranenhoofd," also pulled down.

For the manipulation of ordinary loads there existed no movable apparatus.

The first plant of movable cranes having 1.5 to 2 tons power was placed at No. 29, Asia Dock, especially designed, about 35 years ago, for the iron and zinc ore traffic.

It was then decided to install six steam cranes.

The disadvantages of these appliances soon became evident, principally during the winter frosts. The freezing of the water supply and steam occurred so frequently that it led to extreme difficulty in working the cranes.

The Municipality therefore decided, in 1879, to substitute hydraulic apparatus, and ordered six hydraulic cranes, which are still in use on the quays of the William Dock.

During the last 50 years the number of movable cranes of this description, placed at intervals on the quays of the har-

bour, has been increased as became necessary owing to the exigencies of commerce, as will be seen later in this article.

These vast maritime installations with their powerful mechanical gear have continuously been extended.

### II—Description of the Port of Antwerp

The Port of Antwerp is situated about 55 miles from the sea, on the right bank of the River Scheldt, a deep and tidal river, up which the biggest vessels can easily steam and where they can moor directly at the quay.

The town covers an area of about 21,360 acres, and, taking the suburbs into account, the population reaches a total of approximately 600,000 inhabitants.

Among the numerous factories at Antwerp and the suburbs may be mentioned tanneries and dyers' works, malt floors, breweries and distilleries, sugar mills and refineries, flour mills, coffee kitchens; biscuit, chocolate, preserve, and cigar factories, soap houses, manufactories of candles, linoleum, oils, numerous diamond mills, brick works, cement works, telephone works, manufactories for photographic paper, films, and plates, as well as of cinematographic films, works for engines, motor cars and boilers, shipbuilding yards, ship repairers' shops, etc.

The vast installations which form the Port of Antwerp are:

- (1) The river side bordered by quay walls with wide quays.
- (2) The interior port comprising locked basins which are divided into maritime and barge docks.

The Scheldt, which rises in France, becomes navigable before reaching the Belgian frontier. At Ghent it receives the waters of the Lys, at Termonde those of the Dender, and farther down those of the Durme and the Rupel.

Downstream from Ghent the river is called "Maritime Scheldt" or "Lower Scheldt." At Rupelmonde the Scheldt becomes a deep powerful river attaining a width of more than 550 yds. in front of Antwerp.

Near Doel, i.e., at a distance of 12 miles from Antwerp, it has the character of a bay.

At Bath the river is divided into two arms: the Eastern Scheldt and the Western Scheldt, also known as "the Hont," which is practically the only estuary.

Farther down, between Bath and the sea, a third arm, called "the Sloe," started from the right bank of the river and cut the Isle of Walcheren from the Isle of Zuid-Beveland.

These two navigable passes were closed, respectively, in 1867 and 1871 by the Dutch Government, in order to construct the railroad from Flushing to Venlo.

Since then, navigation with Holland takes place through the Hansweert Canal.

A last improvement will consist of correcting the bends of Austruweel and Calloo.

The quays along the River Scheldt offer an uninterrupted mooring frontage of 3½ miles, and the docks (Maritime Docks and Barge Docks) about 25 miles; the railways, both along the river quays and round the docks total 350 miles; there are 18 maritime docks at the North, the big Canal-Dock included, having a water area of 740 acres and being accessible by four maritime locks; five barge docks, three accessible by one maritime lock; a pier and two landing-stages upstream of the river specially fitted for petroleum steamers; a basin with an outlet in the Campine Canal and intended for interior shipping; twelve dry-docks, 160 acres of sheds, several warehouses and store-houses, powerful hydraulic and electrical stations, 636 various hoisting appliances, comprising: Four electric transporter bridges of 15 tons; floating cranes: one of 150 tons, one of 40 tons, six of 10 tons, two of 8 tons, four of 3½ tons, and one shear legs of 40 tons; electric cranes: one of 50 tons, two of 30 tons, nine of 5 tons, 199 of 3 tons, 48 of 2½ tons, 80 of 2 tons, and 1 shear legs of 120 tons; hydraulic cranes: one of 10 tons, two of 2½ tons, 234 of 2 tons, 39 of 1½ tons; and one hand crane of 15 tons; 24 pneumatic grain elevators, 60 electric or hydraulic working capstans, etc., all that forms the vast installation which is called the Port of Antwerp.

#### River Quays.

The river quays are principally reserved for steamers belonging to regular lines (mail, passenger, and coasting-vessels); they extend from the Kattendijk Dock as far as the petroleum pier.

These quays have been constructed at two separate periods which accounts for their names "old river quays" and "new South quays."

#### Old River Quays.

Pursuant to the agreement of January 16th, 1874, the State constructed (1878-1884) a quay wall 2.17 miles long, beginning at the Kattendijk Lock and ending about nearly half a mile higher up-stream than the South barge docks lock. The Government acquired the necessary grounds by compulsory purchase and built the wall and the railways, the City providing the equipment, i.e., sheds, cranes, and other apparatus.

## Port of Antwerp



Photo]

[Stampe and Vertongen, Antwerp

*Part of Albert Dock (formerly Canal Dock A), showing the Wet Docks.*



Photo]

[Stampe and Vertongen, Antwerp

*The Fire Station and the Entrance to the Canal Dock. In the centre is the Station of the Port Fire Brigade. It was completed in 1923. In the foreground is the Northern end of the Kattendijk Dock. Beyond it, the small junction passage, the Lefebvre Dock, the Entrance to the Canal Dock and the Branch Docks.*

### Port of Antwerp—continued

The walls are founded directly on good soil without intermediary frame-work, and their construction was one of the first applications of compressed-air work on a large scale. (See Fig. 2).

The wall, resting on a foundation of concrete from 8 to 16 ft. thick, was built of bricks and provided with a coating of hardstone from the upper ridge of the wall to about 3 ft. under low-tide level.

The anchorage depth at the foot of the wall is 26 ft. at low tide, and at the Rhine Quay it even reaches a depth of from 32 to 39 ft. below this level. The average rise of the tide is 14 ft., and the crown of the quay wall stands 8 ft. 6 in. above the average high tide.

In the central part of these quays and opposite the "Canal au Sucre" is a floating landing-stage 328 ft. long and 65 ft. wide, fitted with a movable bridge and a lift for vehicles; the ferry boats and other small passenger craft moor at this floating pontoon.

Two similar landing-stages, but measuring only 65 ft. by 32 ft., have been erected, one on the "St. Michel" Quay for the "Pays de Waes" railway station, and the other north of the old quays, near the old docks lock.

Revolving at the rate of 60 revolutions per minute, these machines are able to turn out 1,000 gallons per minute.

The Hydraulic Station serves:—

- 60 movable hydraulic cranes placed in echelons along the river quays.
- 77 movable cranes set up along the "New South Quays."
- 13 hydraulic one-ton capstans used for moving the cranes along the river quays.
- The motor serving for the rotation movement of the maritime lock bridge of the old docks, all the apparatus established on the lock walls and utilised for towing ships and lighters through the lock, as well as for opening and closing the gates.
- A discharging elevator on the Flemish Quay, which is the property of a private individual.
- The rotation and lowering of three of the lock bridges and of the barge docks at the South.
- Six hydraulic movable cranes at the barge docks (South).

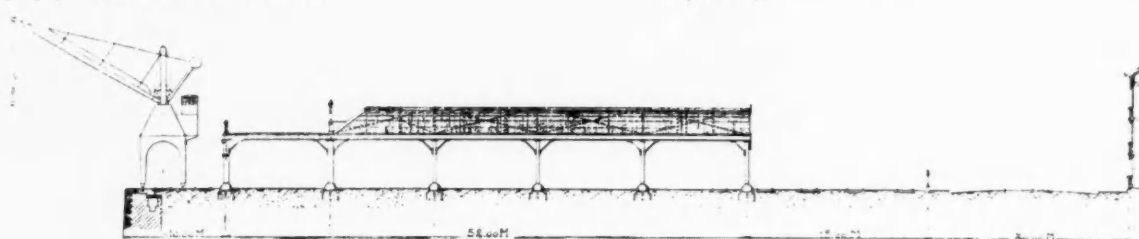


Fig. 1. Section of the Old River Quays.

The width of this portion of the river quays is generally 328 ft. Along these quays are established numerous sheds covering a total surface of 28 acres. Along the riverside of the sheds run two or three lines of railways for through transshipment, whilst beyond these sheds, on the city side, run five lines of railways. All the river quays and sheds are separated by a high railing enclosure from the paved roadway alongside the quays. (See Fig. 1).

The lifting apparatus in use are arch-cranes, sixty in number, and of 1.5 and 2 tons power, the bearing and lifting altitude are 37 and 59 ft. respectively. The water pressure for working the cranes is generated in a hydraulic power-house established on the Walloon Quay of the barge docks at the South.

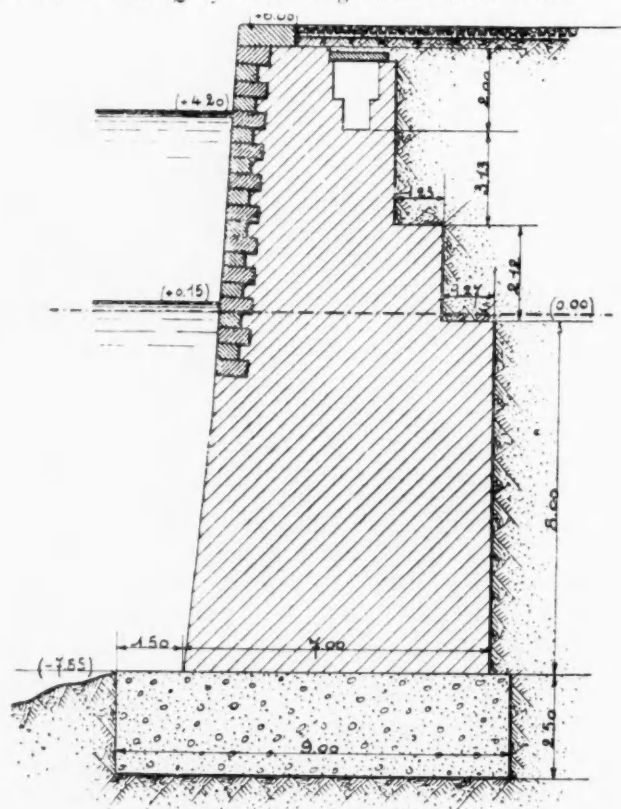


Fig. 2. Wall of the Old River Quays.

This Hydraulic Station contains two similar horizontal machines having each an effective force of 300 horse power; these engines were laid down in 1883, and since that year have never ceased distributing the water under pressure to the cranes and apparatus on the river quays.

The cranes placed on the old river quays are of uniform type, apart from differences in detail, they are all movable and travel on a 13-ft. gauge line.

This arrangement allows a railway line to pass between the archways.

Along the old quays communication from the main line to the various quay-line rails is effected by means of eight or twelve-wheeled sliding-platforms or conveyors into which trucks up to 64 ft. in length are run and then hauled transversally to the quay lines.

By an agreement entered into on September 21st, 1886, between the Government and the town, the latter undertook to supply the power necessary for the capstans to be placed—two in number, for each sliding-platform—along the river quays.

These capstans are used for hauling the railway trucks on to the sliding-platform having a transversal motion, and also for hauling the said trucks on to the rails parallel with the quay.

At the corner of the lock, giving access to the Bonaparte Dock, can be seen the "Pilotage," where the different State offices connected with the Scheldt and its navigation are managed. In this building there is also the local "Radio" station emitting and receiving all wireless instructions to shipping.

Opposite the Canadian Pacific quays is the Custom House, seat of the Customs and Excise Administration, a structure in the Renaissance style.

Over the sheds, on the Van Dyck and Jordaens Quays (immediately North and South of the floating landing-stage) terraces have been constructed parallel with the river, affording promenades and enabling the public to view the roadstead at a glance and to watch the work of loading and discharging being carried out on board the large steamers, usually passenger liners which are moored here. Wide sloping terraces and flights of steps lead up to these terraces.

A monumental gate in the form of a triumphal arch stands at the extreme end of the terrace over the Van Dyck Quay, the only gate which has been preserved of the old fortifications, and this is known at the present time by the name of Water Gate. It was formerly described as the Royal Gate, and was constructed in 1624 in honour of Philip IV, King of Spain. The plans were designed by Rubens and the work was sculptured by Quellin.

#### New South Quays.

In 1895, subsequent to a new convention similar to that of 1874, between the town of Antwerp and the State, the latter laid down, further up the river, 1½ miles of new quays beyond the then existing quays.

The wall in stone (see Supplement), built directly on the ground by means of caissons of compressed air, is raised at the side and lies on a concrete foundation of 31 ft. broad and 11 ft. thickness at the top; it is bordered with rough punctured kerbstone.

The breadth of the upper part of this wall is 11 ft. at the summit and 21 ft. at the base.

## Port of Antwerp



Photo]

[Stampe and Vertongen, Antwerp

*Campine and Asia Docks. In the foreground, the Campine Dock, beyond this, the Asia Dock, with an area of 13½ acres. Into this, the Campine Canal enters by a passage, seen on the right at the top of the picture. These two docks are employed mainly in the timber and mineral trade. The Town has built mineral stores, to be seen on the North of the Asia Dock; a long range of one-storey buildings.*



Photo]

[Stampe and Vertongen, Antwerp

*Kattendijk Dock. The picture shows the Northern part of the Dock, from the Kattendijk Lock (of which a small part is visible in the left-hand bottom corner) as far as the entrance to the first Canal Dock. In the right foreground, the entrance to the Timber Dock. The Kattendijk Dock was excavated in 1860 and enlarged in 1869 and 1881. It has an area of 33 acres and is used by ships drawing up to 21 ft. of water.*

### Port of Antwerp—continued

The town administration constructed the whole shed-space on these quays, as on the first three miles, according to a plan agreed to by the delegates of the various administrations.

The general plan of these new installations differs considerably from that previously adopted, owing to the wider extent of ground they cover.

Stretching along an area of uninhabited land, it has been possible to extend the works to a width of 800 ft., whereas with the old quays the space was limited to 328 ft. The State acquired a strip of 472 ft., and the town a supplementary strip of 328 ft. for the purpose of establishing secondary depots.

It was, however, impossible to keep to this full width across the fortifications. On this spot gable-sheds have been constructed, and the quay machinery has remained the same as on the old quays; on the wider section, that is to say, over a length of some 1,485 yds., the arrangements differ somewhat.

Along the river a space of 53 ft. in width has been reserved where three lines of rails are placed on the quay passing under cranes of the "half-arch" type.



Half-arch Cranes along the New South Quays.

The shed, uninterrupted in its length, is 197 ft. in depth, whereas the sheds on the old quays are only 147 ft. on an average, and is extended to a length of 1,400 yds., covering thus a space of 19 acres.

Two lines of railroads run under the shed, one on the quay side and the other on the side of the embankment; behind the shed there is a network of rails forming a small shunting-station for each berthing place, as will be seen further on.

The shed comprises 64 compartments of 65 ft. parallel with the Scheldt; the columns, perpendicular with the river, are spaced at 40 ft. It is covered with horizontal roofings in the form of a terrace, and is partitioned off in its full length by galvanised corrugated sheets of iron fitted with numerous trap-doors.

The frame-work facing the river has been placed in a straight line with the second row of columns so as to allow heavy and cumbersome merchandise to be put under cover outside the enclosure. Light is supplied in the daytime by four skylights for each compartment; in the evening and at night-time the shed is lit up by electricity.

Longitudinally, the shed is divided into eight parts corresponding to eight berths; the rails on the quay and those behind the sheds are connected by short shunting-lines, some 245 ft. in length, in such a manner that it has not been necessary to construct turntables or sliding-platforms as on the old quays.

Behind these sheds, at each of the eight berths, are installed small shunting-stations, as mentioned above, each of which is composed of eight separate lines more than a mile in length.

Beyond this network of rails are the two principal lines, then the railed gateway and then a road, 65 ft. broad, with a tram line, and further on two lines of rails for circulation along the second line of land and sheds.

On this land the City has already established:

- (1) a fire brigade station with the necessary plant for first aid;
- (2) a closed warehouse of 19,370 sq. ft. for bonding goods in suspended transit;
- (3) a closed metallic shed for inflammable merchandise.

The sheds of the New South Quays cover an area of 24 acres, including those of the second line.

As the State handed over the South quays to the town, the latter installed the apparatus necessary for the use of commerce, and as the hydraulic cranes continued to give satisfaction, their only drawback being the possibility of freezing, it was decided to supply these quays also with distribution of water under pressure.

For a part of these quays down-stream (sheds No. 9 of Herbouville Quay and Nos. 10 and 11 of Ledeganck Quay),

cranes similar to those established on the other quays were adopted, i.e., the complete arch-pillar contrivances running on a 13-ft. gauge line. There are 18 of them.

From the Herbouville Quay, which commences at shed No. 8, archway cranes were no longer practicable in consequence of the numerous junctions of lines connecting the three railway lines laid down between the coping of the quay wall and the shed. This space being necessarily required entirely for the circulation of the trucks, the City adopted "half-arch" cranes. There are 51 of these.

These cranes are supported by means of two rollers running on the shed built alongside the quayside.

They are of two different types having similar general dimensions: span, lifting height, lifting power, length of beam, but their difference lies in the position of the driver's cabin, which, in 31 cranes, is fixed to the lifting beam and turns with it, whereas in the other 20 cranes the cabin is immovable.

The former enables the workmen to follow the load as it revolves, with greater accuracy, yet on the other hand this arrangement depending upon the cross joints of its members for its keeping in working order involves certain difficulties and inconveniences which render its working somewhat more costly.

**Fifty-ton electric crane at Ledeganck Quay.** So as to obviate the necessity for steamers of regular lines, which have their fixed berths alongside the river quays, of entering the docks whenever they have to load or unload goods weighing over two tons, the town has built a 50-ton electric crane on the Ledeganck Quay.

This crane is stationary and worked by electricity; the current used is the "closed-circuit" system, 220 volts.

At the entrance of the Herbouville Quay is a floating landing-stage similar to the one on the old quays, but smaller in dimensions (32 by 65 ft.).

The working of the railway traffic for circulation on the river quays is organised from two large maritime stations: the Antwerp-South Station and the Antwerp-Kiel Station.

At the berth of the mail steamers of the "London and North-Eastern Railway Company," the Company has built a station terminal—complete with booking-hall, waiting and refreshment rooms—this being the junction between the railway line to Brussels and the daily passenger shipping service to Harwich.

#### Petroleum Installations.

In 1904 the America Dock was still assigned to the petroleum trade; the quays being covered by 35 tanks with a total capacity of 14,740,000 gallons, and four rows of warehouses for the storage of petroleum in barrels with a holding capacity of 2,420,000 gallons.

But navigation being continually on the increase, thus enhancing the danger resulting from the presence of these products in the centre of the maritime buildings, the City decided to transfer the tanks to the South extremity of the new river quays and to open America Dock for general traffic.

The new petroleum and oil installations, situated in the low-lying regions of the polder, cover an area of about 158 acres. These are divided into almost rectangular lots, with macadam roadways and a good number of railroads. Of the 158 acres, 87 are already let to private companies, while 18 acres are still available; the rest of the land is covered by roads and railways.

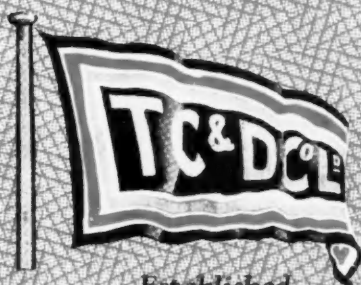
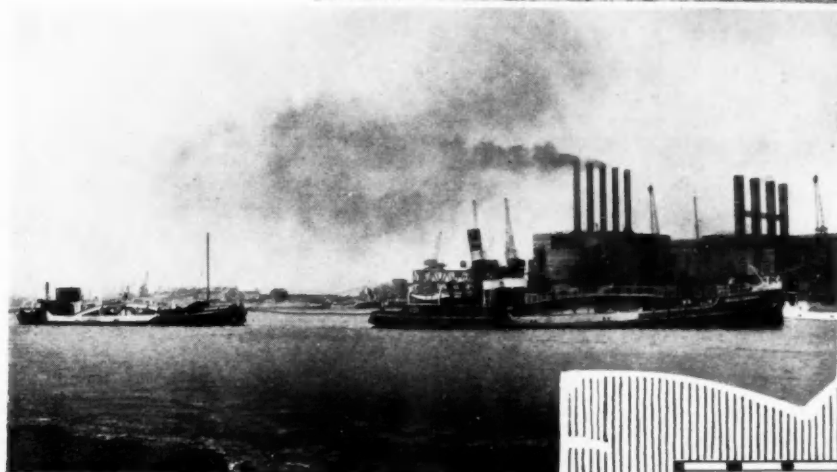
At the end of 1933, 279 tanks of a total capacity of 403,280 cubic metres had been built on those grounds.

At the end of 1923 there were 150 tanks of a total capacity of 253,000 c.m.

"	1924	"	160	"	254,290
"	1925	"	181	"	260,989
"	1926	"	198	"	279,807
"	1927	"	210	"	311,642
"	1928	"	229	"	333,286
"	1929	"	233	"	338,546
"	1930	"	261	"	367,735
"	1931	"	272	"	397,140
"	1932	"	276	"	399,420
"	1933	"	279	"	403,280

These 279 tanks may be divided as follows:—

	Tanks	Capacity
Petroleum	24	51,901 c.m.
Benzone (naphtha)...	53	86,538 "
Petroleum or Benzine (altern. use) ...	10	27,891 "
Petroleum or Gasoil (altern. use) ...	5	12,348 "
Gasoil ...	23	39,683 "
Heavy Mineral Oils ...	27	38,875 "
Heavy Mineral Oils and Fuel Oils (altern. use) ...	11	21,341 "
Lubricating Oils ...	28	20,641 "
Benzine, Petroleum, White Spirit, and Lubricating Oils (altern. use) ...	46	42,182 "
Lubricating Oils or Fuel Oils (altern. use) ...	6	9,627 "
Creosote ...	12	33,026 "
Black Oil ...	2	6,801 "
Fuel Oil ...	3	10,937 "
Texaco Spirit ...	1	502 "
Soya Oil ...	2	1,330 "
Turpentine ...	26	2,658 "



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### Port of Antwerp—continued

Besides the tanks there are storehouses and workshops covering an area of about 85,200 sq. metres.

The whole of these installations, both tanks and warehouses, have been built by private concerns to whom the City has rented the land on a long lease.

Although these installations are situated on low-lying ground and consequently do not endanger the maritime installations, the Antwerp Authorities have edicted special security regulations with a view to limiting disaster in the event of a deflagration. The tanks have been specially earthed round with dykes so as to form reservoirs in the event of any escape or leakage from the tanks; the tanks, moreover, are fitted with lightning conductors and safety valves, and the naphtha storage tanks are built over an evaporation platform so as to enable the lower part to be examined.

Some short distance beyond the petroleum works and in the River Scheldt a landing-stage, 1,000 ft. in length, has been erected parallel to the shore, having berthing-space for two modern tankers or three of small dimensions.

This is a tidal lock, which is opened about 2½ hours before and closed at high-tide.

The number of ships entered and cleared by this lock in 1933, is as follows:—

SEA-GOING	VESSELS	RIVER CRAFT	TOTAL
Entered	Cleared	Entered	Cleared
103	42	8,307	9,437
			17,889

**The Kattendijk Maritime Lock** (constructed 1860) has an opening of 81 ft., a draught of water of 23 ft. at ordinary high-tide, and is provided with the same number of gates as that of the old basins, but these gates are in steel and so constructed that they can be worked at any state of tide.

At the crown of the lock a bridge with a total length of 157 ft. has been built, weighing 300 tons. This bridge is raised by means of two pistons, 31.7 ins. in diameter, until the whole structure is above the adjoining pavement. The required movement of the apparatus is obtained by two horizontal

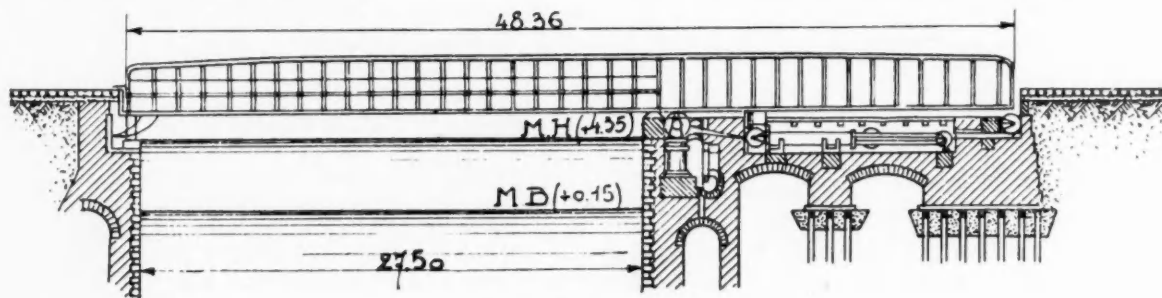


Fig. 3. Rolling Bridge on Kattendijk Lock.

This landing-stage is composed of fourteen pier shafts ranged parallel with the shore and connected by a rectangular foot-bridge, through which runs five pipes of 12-in. diameter, enabling the oil to be pumped straight into the tanks.

#### The Docks.

The maritime docks, situated North of the City, are maintained with a depth of water of 1 ft. below the level of the average high tide, so that vessels can lie afloat at all times.

These docks have an area of about 750 acres and a mooring-length (quays, slopes and piers) of 20 miles.

The sheds along the quays cover a space of about 115 acres.

#### DIMENSIONS AND DEPTHS, Etc., OF THE MARITIME DOCKS.

Name of Docks	Length	Width	Surface	Water-line Depth of (+4.00)
	m.	m.	sq. m.	m.
Bonaparte Dock ... ..	—	—	28,692	6-78
William Dock ... ..	378	156	58,382	6-78
Junction on Kattendijk Dock ... ..	85	50	4,250	7-33
Kattendijk Dock ... ..	957	140	136,330	7-33
Lock Chamber of Kattendijk Dock ... ..	110	70	7,700	7-33
Timber Dock ... ..	530	137	78,150	8-53
Campine Dock ... ..	343.5	160.5	57,239	7-33
Asia Dock ... ..	677.5	102.5	69,527	7-33
Junction on Lefebvre Dock ... ..	115	50	5,750	7-33
Lefebvre Dock ... ..	—	—	105,400	9-25
America Dock ... ..	—	—	69,600	9-25
Albert Dock (formerly Canal Dock A) as far as the junction channel ... ..	—	—	605,625	11-40
Wet Dock No. 1 ... ..	400 + 468.5	180	78,200	9-25
„ No. 2 ... ..	700 + 780	200	148,000	10-45
„ No. 3 ... ..	780 + 1,140	200	192,000	11-40
Junction Channel ... ..	350	100	35,000	11-75
Canal Docks B & C between junction Channel and Kruisschans Lock ... ..	—	—	1,595,250	11-75
Wet Dock No. 4 ... ..	—	300	428,660	5-00

These docks are connected with the River Scheldt by means of four locks:—

**The Maritime Lock of the old basins** (constructed 1811) has an opening of 59 ft., a draught of water at high-tide of 22 ft., and is provided with three pairs of wooden mitre-gates, two pairs of which are for the ebb-tide and one pair for the flood-tide.

At the crown of the lock there is a swing-bridge for vehicular and railway traffic. It is worked by hydraulic pressure.

plungers of 24.4 ins. diameter. (While opening, the bridge slides on four rollers and on a similar number of rollers fixed on the quay.) (See Fig. 3).

The two gates at both heads of the Kattendijk Lock are worked by eight hydraulic capstans of two and five tons. Four of these capstans stand at each bay. The capstans are also used to accelerate the passing through of sea-going vessels and lighters.

The channel leading to the Kattendijk Lock is 361 ft. long and 160 ft. wide.

The gates and bridges of these two locks are worked by hydraulic pressure.

The number of ships entered and cleared by this lock in 1933 is as follows:—

SEA-GOING	VESSELS	RIVER CRAFT	TOTAL
Entered	Cleared	Entered	Cleared
708	393	27,220	15,762
			44,083

**The Royers Maritime Lock** (constructed 1905-1909), has an opening of 72 ft. and a length of 590 ft. The draught of water at ordinary tide is 34 ft. The lock is approached by a channel 1,410 ft. in length and 144 ft. in width at the crown of the lock and goes on widening so that it has an opening of 689 ft. at the wing walls of the lock-crown, which end at the "Thalweg" of the River Scheldt.

The lock is fitted with three rolling gates worked by electricity; these gates are opened and shut in three minutes by means of 54-h.p. motors with a three-phase current of 225 volts.

The gates, of trapezoidal shape, are 45 ft. high, and the distance between the side wings is 17 ft.; they roll on rails fixed at the platform.

The Lock-Chamber is filled and emptied in about ten minutes by means of a series of metallic circular sluice valves worked by plated electric motors of 3.5 and 10 h.p., according to the diameter of the machinery they work.

The electric power is supplied at 6,500 volts and transformed into a three-phase current of 225 volts; the whole is worked from a central office containing the switch-board with the various apparatus for security, interruption, measuring, etc., and in the basement is the static transformer of 100 kilowatts.

The head-bay on the river side is fitted with a kind of draw-bridge turning on a horizontal axle, leaving a free space underneath it to slide in the gate when the lock is being opened. So as to prevent vehicular traffic from being stopped at any time, a bridge running on rollers and secured to the gate by two coupling screws, has been placed along the head-bay gate. The bridge is 65 ft. long and has the same width as the gate.

The head-bay is covered by two cylindrical corners as protection for the propellers of twin-screwed steamers.

The lock and its channel are lit up by 24 arc lamps placed in two rows along each of the side lock walls.

In the vicinity a coal shed for tug-boats, a large shelter for the lock-keepers and different other harbour offices have been constructed. Close to the tail-bay is the lock-keeper's house.

*Port of Antwerp—continued*

The number of ships entered and cleared by this lock in 1933 is as follows:—

SEA-GOING VESSELS		RIVER CRAFT		TOTAL
Entered	Cleared	Entered	Cleared	
2,256	3,546	1,743	8,626	16,171

**The Kruisschans Lock.**—The latest maritime lock, known as "Kruisschans," was opened on August 31st, 1928. Every head-bay of this sluice is provided with two rolling gates. The useful length between the outer gates is 885 ft., the useful width between the bays of the lock is about 115 ft. The height of the water is about 33 ft. at low-tide and about 48 ft. at high-tide. The lock-chamber is filled or emptied in about ten minutes by way of sluice aqueducts provided with Stoney sliding-traps.

A large channel, 1,935 ft. long and 918 ft. wide, leads up to the lock. A bridge has been constructed on the eastern head of the lock.

The number of ships entered and cleared by this lock in 1933 is as follows:—

SEA-GOING VESSELS		RIVER CRAFT		TOTAL
Entered	Cleared	Entered	Cleared	
3,975	3,062	1,764	4,956	13,757

**Intermediary Locks.**—The intermediary locks of the old basins and of the Kattendijk may be considered as forming the head-bays of the maritime locks of these docks.

The intermediary lock of the old basins is provided with a swing bridge and the Kattendijk Lock with a rolling bridge in a groove and non-lifting. This arrangement is due to the position of these locks, which allows the use of lattice girders, as the rollers are secured to a fixed point in the sleepers on the towpath.

The two other intermediary locks, the one at the Lefebvre Dock and the one joining the Kattendijk to the William Dock are not used except for dividing, when necessary, the several basins.

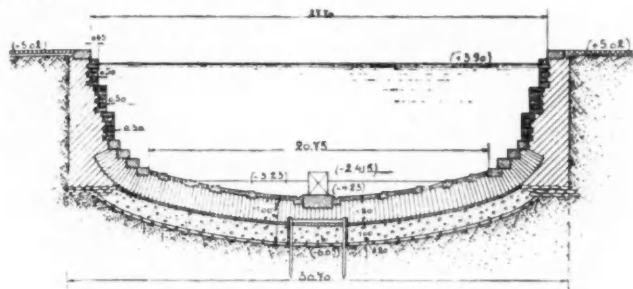


Fig. 4. Sectional view of Dry-dock No. 1.

The maritime lock of the old basins runs in the Bonaparte Basin (formerly the Small Basin) which is connected with the William Basin (formerly the Large Basin).

These basins were constructed by Napoleon at the beginning of last century (1811); on the embankment which separates them formerly stood the "Hanseatic House," erected in 1564 by the merchants of the Hanseatic League, given over to the town in virtue of the convention of January 19th, 1881, turned into a grain store with corn pits and destroyed by fire in December, 1893. Since then the old construction has been replaced by two groups of metallic sheds.

On the North Quay of the Bonaparte Dock was situated the "Prussian Shed," an old tumble-down building for storing tobacco; it has been replaced by a closed metallic shed; on the East Quay rises the Solvay Warehouse; on the Southern Quay of the William Dock are situated the closed sheds for imported fruit, and the warehouses "St. Félix," "Rubens" and "Godfried." Numerous wings of the Royal Bonded Warehouse (Entrepôt Royal) are situated along the Eastern Quays.

Sheds on the Godfried and Napoleon Quays, and arch-cranes and pyramidal cranes complete the working material of this dock.

In the vicinity of the William Dock the City has recently erected a workmen's shelter.

**Royal Warehouse.**—This vast construction, covering an area of more than eight acres, is situated between the William Dock and the Avenue d'Italie; it comprises four large pavilions separated by inner yards.

The buildings, at the dock side, known as the "old pavilions," date back to 1830-1834; their plans were designed by a certain M. Roelants, an architect from Ghent. The new pavilions, situated near the Avenue d'Italie, were built in 1844-1847 under the management of the engineer de Marbaix.

On the 5th June, 1901, these warehouses were totally destroyed by fire, and were later rebuilt in reinforced concrete.

The new buildings, comprising four stories, are fireproof and

built according to the most-up-to-date principles of security and incombustibility.

Offices and stores have been constructed for the use of customs officials.

The Royal Warehouse buildings which were burnt down, were furnished with fifteen hydraulic appliances for manipulating goods. This machinery, comprising 1½-ton hoists and fixed cranes of 18-cwt. capacity, were fitted up in 1869, and were driven by a non-condensing steam engine of about 50 h.p., including two boilers of appropriate size and an accumulator.

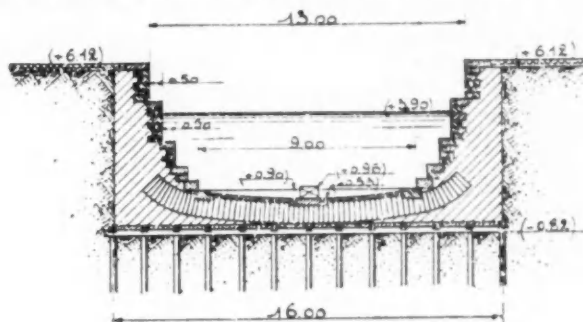


Fig. 5. Sectional view of Dry-dock No. 3.

As this machinery worked very intermittently and was relatively unimportant as well as somewhat uneconomical, it was decided, owing to the rapid advance realised in electricity, to fit out the new buildings with gear worked by this power.

In the rebuilt premises the following gear was successively laid down:—

Fourteen lifts of a power of 1 ton and 12 cwt. for the use of the cellars and the four storeys.

Four fixed cranes with 12-cwt. hoisting power for storing goods on the different floors.

Two lifts of 1.5 tons for the two one-storey-floor buildings in the South yard.

Two lifts of 1.5 tons in the new North Pavilion.

Two cranes of 17 cwt. fixed to the front of this pavilion.

Three wall cranes of one ton each fixed to the walls in the North yard (pavilion B) and in the central yard (pavilion D). In all, 27 electric appliances.

The windlasses, with the electric motors they are driven by, are fixed above the roof in small concrete cabins; the gearing for the cranes is fixed in the rooms on the upper floor of the building.

The electric current for all this machinery is supplied by the "Compagnie Electrique Anversoise," which company supplies the City of Antwerp with the necessary current at 220 volts.

The floors of the pavilions and warehouses have been tested to bear a weight of 610 lbs. per sq. ft. The storage surface is 678,000 sq. ft., of which 94,000 sq. ft. are cellars; the storage capacity, calculated at the aforesaid rate, is approximately one hundred thousand tons, not including the weight of goods stored in the cellars.

**Godfried Warehouse.**—This store-house, erected by the town authorities in 1904 at the Godfried Quay, is a brick building with flooring and columns in iron concrete; it comprises a ground floor and four storeys with a gallery on each storey just as in the Royal warehouse. The storage surface is about 35,000 sq. ft., and can bear a weight of 6,548 tons.

It is provided with an electric 1.5-ton lift and a fixed electric winch for 17 cwt.

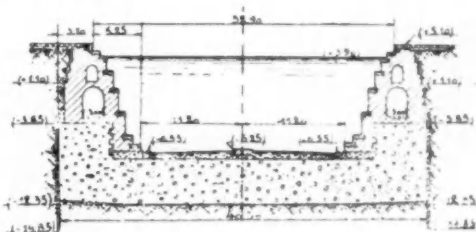


Fig. 6. Sectional view of Dry-dock No. 7.

**St Félix and Rubens Warehouses.**—These have storage surfaces of about 250,000 sq. ft. and about 60,000 sq. ft. They are provided with 13 hydraulic cranes and lifts, fed by the hydraulic pipe-lines of the North Docks.

The Kattendijk maritime lock leads to the Kattendijk Dock, which opens into the Timber, the Campine and the Asia Docks.

**Kattendijk Dock.**—This dock was built in 1860, and was enlarged in 1869 and in 1881; vessels of a draught of water of 21 ft. are admitted.

The "Africa" store-house, belonging to the "Docks Entrepôts Company," and the "Victor Lynen" store-house, are situated on the East Quay, and cover an area of about 55,000 sq. ft.

### Port of Antwerp—continued

Further on, stand the hydraulic machine installations of the North, the 120-ton shearlegs, and a 10-ton crane.

The hydraulic station at "Kattendijk" was constructed in 1878-1879; it is used for the hydraulic machines established on the dock quays, and now comprises five steam engines and two electric centrifugal pumps, capable of compressing about 2,640 gallons of water per minute into the main delivery.

The station supplies both the fixed and movable hydraulic cranes on the Docks; the machinery for swing and rolling bridges, the hydraulic capstans used for working the Kattendijk and the old basin locks, one-ton capstans for shunting the movable cranes and the railway trucks on the Rhine Quay, and for pulling the barges along the bridges.

The 120-ton shearlegs, purchased in 1878, is fitted up near the primary Kattendijk station. Its total height is 96 ft. above the quay, and is composed of two arch-pillars joined at the crown and turning on a pivot at their base.

An inclined traverse is secured to the crown of the apparatus and moves along two solid steel screws. As the traverse moves along it sets the apparatus in oscillatory motion at an amplitude of 42 ft. The crown of the apparatus can be projected to a distance of 29 ft. beyond the wall and be brought back 13 ft. behind the beam-head.

By arranging the block-tackle and chains in certain ways the apparatus can be utilised for loading and unloading packages weighing up to 15, 60 and 120 tons.

Since its installation—some fifty-five years ago—the framework has remained unchanged. However, twenty-five years ago the Town authorities replaced the hydraulic motor by an electric contrivance. This consists of:—

One motor of 80 h.p. for the hoisting motion,

One motor of 40 h.p. for the oscillatory motion.

These two motors are driven by a direct current of 550 volts.

A test-weight of 120 tons is kept under the arch-pillars of the apparatus so that at any moment the Town authorities can test and check the stability of the chains and other accessories.

The equipment of the quays is completed by metallic gabled sheds of a type similar to those on the river quays.

On the West Kattendijk Quay the town possesses and runs a number of closed sheds called "Magasins Montevideo," having an area of nearly two acres.

#### Dry Docks.

Nine graving or dry-docks are connected with the Kattendijk Dock and a tenth one (No. 7) with Lefebvre Dock. There are also two privately-owned dry-docks situated at the south of Canal Dock C. Their dimensions are given in the following table:—

DIMENSIONS OF THE DRY DOCKS.

Docks	Length m.	Width m.	Draught m.
No. 1 ... ..	158.65	23.95	6.31
No. 2 ... ..	70.80	12.00	3.98
No. 3 ... ..	49.70	10.00	2.94
Nos. 4, 5, 6 ... ..	135.00	15.00	5.34
No. 7 ... ..	225.30	26.00	8.70
Nos. 8 and 9 ... ..	151.00	20.00	6.40
No. 10 ... ..	100.00	15.00	5.35
The Merc. Mar. Eng. and Grav. Docks Co. ... ..	165.00	20.20	6.59
	145.03	18.50	5.94

Dry Dock No. 7, opening into Lefebvre Dock, has operated since August, 1920. Its dimensions have been given above; the height of the stocks is 4-ft., and the closing is done by means of a floating caisson. Its capacity in water volume is 2,295,000 cub. ft. The draining of the dock—when there is no ship in it—takes 1½ hours by means of three centrifugal pumps.

In order to facilitate the repairing of ships, the City had a rolling crane of 30 tons established at Dry Dock No. 7.

The City puts the dry-docks at the disposal of all parties interested who pay dues proportionate to the tonnage of the vessel and the time it occupies the docks.

Dry-docks, Nos. 8, 9 and 10, were constructed north of dry-docks, Nos. 1 to 6, and also open into Kattendijk Dock. They were completed at the end of 1930. The two dry-docks belonging to the Mercantile Marine Engineering Works were also completed in 1930.

**Timber Dock.**—This dock is closed in by metallic sheds to be used chiefly as temporary timber depots. The South side is a pitch-covered slope; the North side is provided with a bridge on which run two lines of railways and a line for cranes.

**Campine Dock.**—The East and South Quays are walled, the West bank is a slope.

The West Quay, partly covered over by wooden sheds, is specially reserved for grain barges. For this purpose four wooden piers, 246 ft. long by 13 ft. wide, have been erected as moorage for small interior craft.

The East Quay is set apart for the ore traffic, and its machinery—same as on the South Quay—comprises hydraulic arch-cranes.

**Asia Dock.**—The Asia Dock, built in 1873, lies to the East of the Timber Dock and directly communicates with it; the Campine Canal flows into this Asia Dock and connects it with the North Lighter Dock (Loobroeck).

The sides of the dock were originally sloped, but they have been replaced by a quay wall. The West side is reserved for general traffic; the North part is usually used for the timber traffic, and a part of the East Quay has been arranged for transshipping ore. For this purpose the City authorities have built special warehouses along this quay.

**Lefebvre and America Docks.**—North of the Kattendijk Dock and connected with it by a lock-junction, lies the Lefebvre Dock.

The North-East Quay has sheds and electric cranes, on the South Quay there are hydraulic cranes of the usual type.

On the South Quay, next to the America Dock, stands a vast building with corn-pits for storing and mechanical loading and unloading of grain; this building has a surface of 27,000 sq. ft., and can hold nearly 1,000,000 bushels.

Into the Lefebvre Dock runs the America Dock, which has been open for regular traffic since 1905, and which, prior to this year was exclusively used for the petroleum trade. Into the Lefebvre Dock likewise runs the Royers Lock, which has been referred to previously, and also the new North Docks, which will be briefly described.

The America Dock quays are provided with 29 electric cranes of two tons.

#### Hydraulic Cranes along the Docks.

Scattered over the quays of the various docks are 273 movable hydraulic cranes of 1.5 and 2 tons.

The first six cranes were supplied over 45 years ago, and are still in use.



Hydraulic Cranes along the Docks.

They may no longer be in proportion—in height and reach—with the present-day dimensions of steamers; nevertheless, they have never ceased rendering excellent service and require but slight expenditure in upkeep.

They are built in the frustum of a pyramid shape and run on lines with a 7-ft. 8-in. gauge.

The number of these cranes, ordered successively, was increased to 22. Machines of this kind are generally suitable for quays that cannot be used for railways.

The other cranes along the docks are arch-way cranes, running on a 14-ft. 9-in. gauge line, and are similar to the cranes at the river quays.

An exception, however, has been made for a few cranes along the America Dock quays; the arch-pillars of these stand 29 ft. 7 in. apart, so that a double line of railway may pass under the arch-way.

#### New North Docks.

The first Wet Dock and the corresponding part of the Canal Dock were opened for use in the beginning of 1907. This part of the Canal Dock has a depth of water of 33 ft. 5 in., and the first Wet Dock of 30 ft. 2 in.

The second and third Wet Docks and the corresponding section of the Canal Dock were opened to commerce in 1913. Their depth of water is 37 ft. 2 in. for the Canal Dock and the third Wet Dock, and 34 ft. 2 in. for the second Wet Dock. No. 4 Wet Dock was opened in 1932, and has a depth of water of 28 ft. 6 in. This has been constructed to the South of Canal Dock B. The Canal Dock is 816 ft. wide and one mile long.

All these docks communicate with the River Scheldt through the Royers Lock or the Kruisschans Lock which work at all tides and in ten minutes; hence the walls of these docks may be considered as river quays in deep water, alongside which steamers with a 30 ft. cargo water-line can be moored. Vessels that once had to lighten in the roadstead, now steam straight-

## Port of Antwerp



Photo]

[Stampe and Vertongen, Antwerp

*The Potash Stores, between Wet Docks Nos. 2 and 3.*



Photo]

[Stampe and Vertongen, Antwerp

*Lefebvre and America Docks. The Lefebvre Dock, which has an area of 20 acres, is the junction between the Kattendijk Dock and the first Canal Dock. The America Dock has an area of 13 acres. These two docks were opened in 1905. In the foreground, centre, is Dry Dock No. 7 and to the left the Fire Station. The Granary can be seen at the top of the picture, on the left.*

*Port of Antwerp—continued*

way into the docks, where the most up-to-date and complete machinery for manipulating their cargo awaits them.

The walls of the Canal Dock are so constructed that the bottom of the basin can eventually be deepened to give a water-height of 36 ft.

For the equipment on the quays the general arrangement, outlined above (Fig. 7), has been carried out. Along the quay run three lines of railways, and one line for the cranes; the sheds stand at 55 ft. from the dock, are 197 ft. deep, and are served by two lines of railways. Then there is a 33-ft. roadway, then the circulation railways, and behind these the area for depositing merchandise.

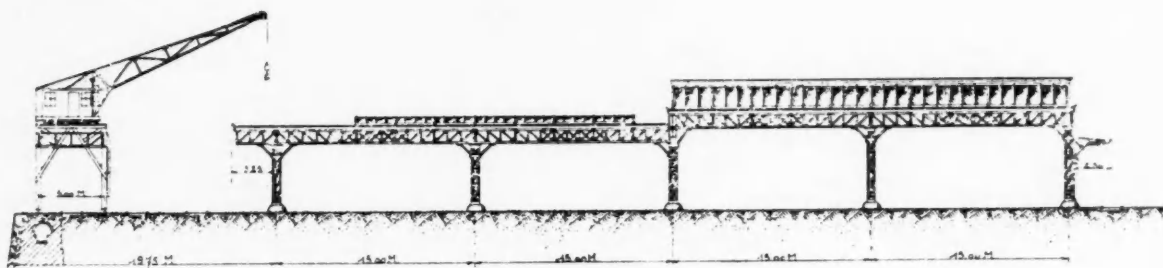


Fig. 7. Section of South Quay of First Wet Dock.

On the South Quay of the first Wet Dock some of the sheds are closed and some open.

The closed sheds comprise two sections with a covered area of more than three acres. One section is open on the dock side and merely partitioned off at the sides; this section is used for general merchandise.

The other section is completely closed in by enclosure walls, with double air-cushioned partitions, and the skylights are raised and movable for ventilation, when needed. These warehouses are used for bonding fruit (oranges, lemons, raisins, etc.).

The open sheds comprise an area of nearly seven acres.

All these sheds are terraced; the columns parallel with the quays are spaced at 44 ft., and the distance taken perpendicularly with the quay is 49 ft.

Light during the day is afforded through small skylights raised in the roof. In the evening and at night-time one section of the sheds is lit up by gas and the other sections by electricity.

On the North-West Quay of the first Wet Dock closed metallic sheds have been constructed, covering an area of about 2.5 acres.

On the West Quay of the first section of the Canal Dock the sheds cover an area of about 18 acres, part of which are utilised for storing nitrate. The East Quay of the same dock has 2½ acres of closed sheds.

The North, South and East Quays of the second Wet Dock are provided with about 14 acres of closed sheds, made of iron and concrete.

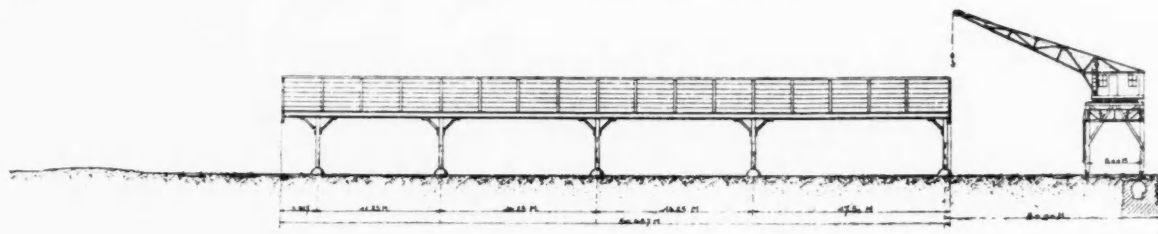


Fig. 8. Section of West Quay of Canal Dock.

The South-East and North Quays of the third Wet Dock offer closed metallic sheds over an area of about 7½ acres.

On the North Quay, moreover, were built five nitrate warehouses, covering nearly 6½ acres.

On the East Quay of the second section of the Canal Dock (Quays Nos. 152 to 158) the City, in 1927, built extensive warehouses for storing, handling and packing in sacks Alsatian potash salts; they cover an area of more than four acres, and offer storage room for about 150,000 tons of potash salts in bulk.

The installations comprise:

- (1) two warehouses, each 853 ft. long, 90 ft. wide, and 50 ft. high;
- (2) a square building of 49 by 49 ft., seven storeys high, for sacking and distributing.

The up-to-date mechanical equipment and the capacity of these warehouses are quite unequalled in the whole world. The installation and machinery are organised so as to allow a daily handling of 6,000 tons of potash salts and the sacking

and storing of 1,000 sacks per hour. The conveyor belt can displace 750 sacks of 2 cwts. per hour at a speed of 260 ft. per minute, or between 150 and 200 tons in bulk per hour. The equipment comprises five bucket elevators, several endless driving belts for carrying the salts in bulk and in sacks, six scrapers, three cranes of 7.5 tons, four grab-cranes of five tons. All this gear is driven by electricity and enables the transshipment of warehoused salts into lighter, from lighter or from warehouse into ship. The quantities of salts handled in these ways during 1929 amounted to nearly 600,000 tons. The construction of these stores gave rise to an expense of more than £100,000.

The Canal Dock and the Wet Docks are provided with electric cranes of 2, 2½ and 3 tons, moving on a track of 16 ft. wide.

At No. 108 of these docks is a 30-ton electric crane running over an ordinary 16-ft. gauge line on twelve wheels, four being in front and eight behind. This crane is specially used for unloading marble and manipulating similar heavy merchandise.

Behind Quay No. 104 of the first Wet Dock, the City built two closed warehouses for the storing of cabinet timber. These installations cover an area of about 1½ acres.

Between the first and second Wet Docks a large basin has been excavated where hundreds of barges find a safe refuge.

At the North of the Canal Dock (pre-war part) the Junction Channel proceeds towards the West and leads into the Prolonged Canal Dock. This latter has a length of over three miles and a width of 985 ft. About midway it turns with a wide angle to the N.W. as far as the Kruisschans Lock. In that bend the canal has a width of 1,310 ft. It has a depth of 39 ft.

*Tug Boats.*

Since 1875 the City has run a municipal service of tug boats for the convenience of ocean-going vessels in and out of the maritime installations.

At that time the City bought up three second-hand tugs, which were sold successively, and since 1881 the City has recognised the necessity of increasing its fleet of tugs by purchasing new vessels.

Among the present fleet of tugs there are eight specially framed for eventual use as ice-breakers in the docks. These boats are more heavily edged and their frame-work is more solidly built. They are, moreover, supplied with a strong collar round the water line, both fore and aft.

Tugs No. 1 to 12 have engines of about 100 nominal horsepower. For vessels of more recent construction the Administration—in order to keep pace with the ever-increasing movement in the docks—has adopted engines capable of developing about 130 to 150 h.p.

Most of these tug-boats have a length varying between 39 and 49 ft., a width of 15 ft. at the midship-frame and a depth of about 9 ft.

Four tugs, of recent construction, are provided with an engine of 200 h.p., have a length of 69 ft., a width of 16 ft. and a draught of 10 ft.

The two tugs, of most recent construction, are each driven by an engine of 300 h.p. They are 72 ft. long, 18 ft. wide, and have a draught of 11 ft.

## Port of Antwerp



[Photo]

[Stampe and Vertongen, Antwerp]

*Where the City meets the Harbour. In the centre of the picture is the Avenue of Italy, with the buildings of the Royal Warehouse. To the left of the Warehouse, the William and Kattendijk Docks. On the right are the Antwerp Docks Goods Station and the Campine Dock. Above them, the Timber Dock. At the top of the picture, the entrance to the Canal Dock.*



[Photo]

[Stampe and Vertongen, Antwerp]

*The first Canal Dock and Branch Docks. The first length of the Canal Dock and the first Branch Dock, on the right, were brought into use in 1907, the rest in 1913. The whole group covers an area of 145 acres, the depth varies from 11.45 metres (37½ ft.) to 9.30 metres (30½ ft.) Behind the first Canal Dock may be seen the Sheltering Basin for Lighters. On an average, about 300 lighters lie there. At the end of the Quays, between the second and third docks, are the Potash Stores.*

### Port of Antwerp—continued

The number of tug-boats belonging to the City is forty. Towage on the river is provided for by private companies.

#### Grain Elevators.

The City owns twenty-four pneumatic grain elevators capable of transshipping from ship into lighter 200-300 tons of grain per hour. The grain is sucked up from the ship into the



Six Grain Elevators transshipping Grain into Lighters.

tower by means of four pipes. After it has been weighed automatically, the grain is discharged through a telescopic pipe into the lighter.

These elevators work on the river and in the docks. In 1933 they transhipped 3,042,324 tons of grain.

#### Bridges.

The channels connecting the different docks are provided with hydraulic swing-bridges, except the bridge across America Dock and the bridge over the Junction Channel, which are driven by electricity.

The bridges may also be turned by hand.

The so-called "Mexico Bridge" between the Kattendijk and Timber Docks has been replaced by two rolling twin-bridges. The channel has at the same time been widened from 49 ft. to 69 ft.

A bridge of 115 ft. is established on the upper head of the Junction Channel. Two other bridges of the same dimensions have been constructed, one for the lower head of the same Junction Channel, the other for the upper head of the Kruisschans Lock.

#### Barge Docks.

Besides the maritime docks there are five docks specially set apart for interior navigation.

At the North, branching with the Campine Canal is the Loobroeck Dock, 1,472 ft. long, 131 ft. wide, and with a depth of water of 8 ft. 8 in. The quays are built in slopes. On the South Quay of this dock a hand-crane of 15 tons has been erected. At the South there are three barge docks with dimensions and draught as given in the table hereunder.

DIMENSIONS OF THE BARGE DOCKS.

Name of Docks	Length m.	Width m.	Surface sq. m.	Depth of Waterline (+3.45)
Coal Dock ...	246	50	12,300	5.07
Barge Dock ...	267	65	17,355	5.07
Brick Dock ...	226	50	11,300	5.07
Lock Chamber of Barge Docks	75	25	1,875	Waterline (+4.00)
Loobroeck Dock ...	450	40	19,035	3.30 Waterline (+4.00)
Refuge Dock ...	—	—	79,000	3.00

The central dock communicates with the Scheldt by means of a lock 43 ft. wide; the mitre-sill being at about 5 ft. under low-tide, allows at that moment the passage of barges of nearly 6 ft. draught.

The iron lock-gates are worked by hand and four capstans facilitate the passage of the barges through the lock.

The turning-bridges over the lock-heads and the junction channels of these docks are moved by water under pressure.

There exists, moreover, a shelter dock for lighters between the first and second Wet Docks.

#### Dredging.

The City, to maintain the depth of the docks and the small channel passes, owns three dredgers, one barge, with wells having a capacity of about 55,000 gallons, one of 110,000, and a third one of 121,000 gallons.

One of the dredgers may only be worked at a depth of 33 ft., which is inadequate for present-day navigation. The more recently-built dredgers, bought in 1909 and 1923, can attain a depth of 49 ft. The buckets composing the chain have a capacity of 132 gallons.

The barge, of which the well has a capacity of 55,000 gallons, was delivered in 1897. It has been designed so that, if necessary, the dredged mire can be discharged over the quay by means of two centrifugal pumps.

The barges "Watergeus" I and III are 164 ft. long, 33 ft. wide, and 13 ft. deep.

#### Shipbuilding.

At Hoboken, Cruybeke and Burght, localities above Antwerp, there are several shipyards.

These shipyards possess important installations and perfect equipment, enabling the yards to undertake the building of big ships.

In order to further the expansion of shipbuilding in Belgium, the Government, since 1900, allows the importation free of any dues of all materials and objects necessary for the building, equipment, rigging and furnishing of ships and boats.

#### Ship Repairing.

The number of dry docks proves that ship repairing is a port industry of the utmost importance.

It gradually increased, very much on the same lines as the port itself and as shipbuilding in every respect.

At present there are a dozen ship-repairing shops; four of them are perfectly supplied with all necessary equipment for ship repairing in general: mechanics, electricity, boiler-making, plate-bending, carpentry, joinery, cabinet-work, plumbery, painting, rigging, etc.

The other shops are more or less specialised in some of these branches.

In 1932, 306 ships entered the City-owned dry docks, and in 1933, 302 ships entered.

One is entitled to state that Antwerp is to be considered one of the best-equipped ports of Europe for upkeep and repairing of ships.

### III—The Management and Working of the Port

The administration and management of the Port of Antwerp are in the hands of the Municipal Council.

The Corporation of the Burgomaster and Aldermen form the Administrative and Executive Board, examine and prepare all business matters to be placed before the Municipal Council, whose decisions, in certain cases, provided for by the municipal law and according to their importance, must be approved by the Provincial "Permanent Deputation," or sanctioned by the King.

The Corporation is entrusted with the management of all the maritime establishments and with the Police Superintendence of the Port.

The Captain Commander of the Port, his officers and staff as well as the engineers are under corporation control.

The River Police, the lighthouses, beacons, and buoys, the pilot service, the management of the quay railways, the Customs service, are under State control.

The Port of Antwerp is divided into two distinct parts:—

(1) The North maritime installations, the City's property, and built, with the exception of the old docks, at the City's exclusive cost.

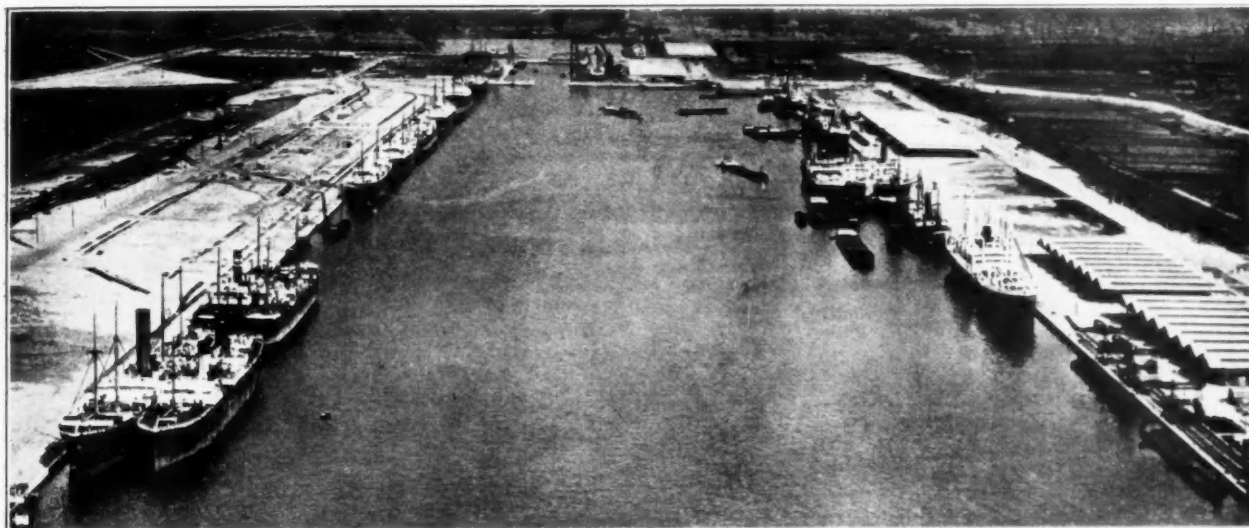
The management is in the hands of the municipal administration, which collects the returns.

Incumbent on the City is the up-keep, improvement, and extension of its floating docks and their adjoining works and appurtenances, the building and working of the dry-docks, sheds and shelters, warehouses, the special installations for petroleum and various merchandise, the cranes and other machines for loading and unloading, the towing service in the docks, the ballasting and unballasting of vessels, the framing of regulations for, and the police supervision of, the docks and quays.

(2) The river quays along the Scheldt and the barge docks in the South have been constructed by the State, but are run and managed by the City pursuant to special agreement.

The working of the Port and the occupation of the quay sheds, bonded stores, and warehouses, are subject to regulations and tariffs which are far too extensive to be entered into here.

## Port of Antwerp



Photo]

[Stampe and Vertongen, Antwerp

*The Second Canal Dock. The picture shows about one-third of the second Canal Dock, that is the vertical portion. The North Quay, on the left, inclines Northward up to the Kruisschans Lock. The distance from the connecting passage as far as the Kruisschans Lock is 5.1 kilometres (3½ miles), the width is 300 metres (400 metres at the bend) and the depth 11.80 metres (38½ ft.)*



Photo]

[Stampe and Vertongen, Antwerp

*The Junction of the First and Second Canal Docks. In the distance, the prolonged Canal Dock, separated from the communicating passage by the Bascule Bridge. In the foreground, the second Canal Dock. To the left, on a level with the Canal Extension, the buildings of Continental General Motors; below, the Ford Motor Factory, under construction; nearer still, the Erection Yard for Cranes and other Port Machinery.*

## Port of Antwerp—continued

### Railway Stations.

The **Antwerp-Central Station** is principally a passenger and baggage station, and hardly figures in the forwarding of goods. It is situated in the centre of the town, and the total development of its railways is of about eleven miles.

The **Antwerp-South Station**, situated at the southern extremity of the avenues, is open to:

- (1) passenger service, traffic of luggage, finances and other values, horses, cattle and carriages;
- (2) the service of all merchandise belonging to local traffic, except for the arriving parcels to be delivered at home;
- (3) the import, export and transit by water.

It has a working area of about 103 acres, and its railway lines are thirty miles long.

The **Antwerp-South Station**, specially adapted to the reception of goods trains, serves about 9,000 ft. of quays down to the Pilotage along fifteen miles of rails, and the new South quays (6,500 ft.) along ten miles of railway lines.

In this station there exists a park for loading and unloading, electric cranes of five and three tons, and two hand-cranes, the one of ten and the other of 2.5-tons hoisting power.

At the goods shed, which is 490 ft. long and 245 ft. wide, are four electric cranes of one ton each.

Near Shed No. 9 of the New South Quays rises the station of the "London and North-Eastern Railway Company" for the trains in connection with the steamers of that company, plying daily between Antwerp and Harwich.

The **Antwerp-Kiel Station** is a section of Antwerp-South Station; it has an area of 150 acres and a railway net of about thirty miles, those of the petroleum installations included; it is specially reserved for the formation of goods trains leaving the port, with the exception of transfer trains, these being formed at the South Station. The Kiel Station disposes of a truck-crane of three tons and of the necessary tracks for repairing goods vans.

The Antwerp-South and Antwerp-Kiel Stations register a daily movement of about 2,600 wagons; 6,000 wagons may be shunted there without cumbrance for the traffic.

The Bridges and Roads Department, the Railway and the City Administrations are projecting new installations to replace the South and the Kiel Stations, so that the petroleum installations might be easily extended. These new installations will comprise modern equipment for the feeding of the engines with coal and water and for the quick repairing on the spot of motors, engines and wagons.

All these new installations will cover an area of about 460 acres, and have a development of a 100 miles of tracks.

The **Antwerp-Docks and Warehouse Station** comprises, between the Rhine Quay, the timber station, the Royal Bonded Warehouse and all the docks, the principal goods station at the Place du Nord, the park for discharging and the innumerable tracks to shunt trains for the different sections of the docks. This station serves to classify and temporarily shelter the arriving trains; it groups the loaded and empty wagons bound for the docks and the Royal Bonded Warehouse, and those which come from these places. There also are loaded and unloaded the goods discharged on quays without railway tracks or coming from official and private warehouses. Special store-rooms are appropriated for goods under customs control which may not enter the Royal Warehouse. There is also a special shed for forwarding of petrol and other oils.

The tracks are laid between four loading-platforms 27 ft. wide, beyond which there are many other tracks parallel to the former. Along these are 13 capstans and 12 return pulleys for shunting the wagons.

On the platforms 28 hydraulic cranes of one and two tons are installed, and in the open station 22 capstans with return pulleys, 11 cranes of one and two tons, four cranes of five tons, one crane of ten tons, and one crane of 15 tons. In this part of the station is also the hall for the necessary machinery and hydraulic pumps to shift the wagons, feed the engines, and provide the electric light.

The station at the Rhine Quay is reserved for the goods embarked and discharged into and from the ships mooring there, especially the Red Star Liners. The timber station is intended for the loading of timber, yet other goods may be handled there. This station has a development of five miles of railway tracks.

The **Antwerp-Stuivenberg Station** comprises the buildings and tracks known under the name "Stuivenberg Station" as well as the branch station of Zurenborg; it is a shifting and terminus station.

The stations **Antwerp-Docks and Warehouses** and **Antwerp-Stuivenberg** have an average daily movement of over 4,000 wagons up and down. These plants cover an area of more than 375 acres, and have a development of tracks of more than 62 miles. There is accommodation for 8,000 wagons without using the main tracks or hindering the traffic.

The **Austruweel Station**, a branch of Antwerp-Stuivenberg, is situated between the passenger stations of Antwerp-Dam

and Eeckeren, at a distance of 2½ miles from the former and one mile from the latter; it has to serve the traffic of the Canal Dock, the first, second and third Wet Docks, the America and Lefebvre Docks, as well as the northern part of Kattendijk Dock, the Timber and Asia Docks.

The **Austruweel Station** has an approximate area of 76 acres, with a development of about 35 miles of tracks and accommodation for 4,000 wagons; it is directly connected with the North docks (Canal Dock and Wet Docks). Provisionally, in order to discharge Zurenborg Station, that of Austruweel has to receive the wagons to form the down-trains. Moreover, the wagons coming from Zurenborg and bound for the North docks call there.

The **Antwerp-North Station**.—The Belgian National Railway Company has constructed an extensive formation station in the district Oorderen (north of the new docks). This station, which covers an area of three miles long and nearly one mile wide, commands all the northern docks.

The total extension of the railways and stations about the port installations is not less than 400 miles.

Independently of the above-described stations, we must still mention:

The **Borgerhout Station**, which only serves for local forwarding and reception of goods not subject to customs dues.

The **Pays de Waes Station**, on the right bank of the Scheldt, has no rolling plant, as the tracks stop on the left bank; passengers and goods are transported by ferry between the station and the tracks.

## IV—Advantages of the Port of Antwerp

### Natural Advantages.

The geographical position of the Harbour of Antwerp is unique. It is located on the main highway of commerce between Europe and the other continents of the world: it is on the crossways of the most important waterways and the highly-developed railroads of the Continent. It is the natural port of the most active population and of the most industrial region of Europe. Because of its distance from the sea (about 55 miles), it is sheltered from storm; on the other hand, ships carry goods far into the interior, and in this way serve a wider hinterland under excellent conditions.

Thanks to this central position on the commercial highway of Europe, Antwerp is the connecting link between the British and German trade on the one hand and the overseas trade on the other, while other continental harbours are too much to the North or the South or too distant from the industrial centres.

This central position makes Antwerp the port of call par excellence. It is the intermediary port between the eastern and western, as well as between the northern and southern countries. Its exceptional importance, the basis of its welfare, lies in its geographical situation, its natural shaping, which, notwithstanding constantly varying commercial legislation, have always led the currents of traffic through the Scheldt Harbour.

### Waterways.

Antwerp not only serves the drainage basin of the Rivers Scheldt and Lys, but also those of the Meuse, Sambre and Rhine, mutually connected by canals which on Belgian territory have a length of 1,473 miles. The Rhine communicates with the Scheldt by means of the maritime canal of Hansweert.

The Belgian Government pays for the towage from Dordrecht to Antwerp for craft coming from Alsace-Lorraine.

### Railways.

To the above geographical advantages have to be added those of an economic order.

With this system of waterways, is to be mentioned the densest railway net of Europe: about 19 miles of railways per square mile! One may say the quays of the river and docks of the Port of Antwerp are connected by rail with the smallest village of the Ardennes, as well as with all the commercial and industrial centres of Western and Central Europe.

The perfectly-equipped railroads laid out on the quays alongside the river and docks, permit discharging and loading directly from ship into truck, the forming of trains on the very spot, and their immediate despatch to their often very distant destinations. Of course, the contrary operations are possible, as can be seen every day: trains from the interior or the further hinterland, loaded with goods for different overseas destinations, come down to the harbour, where they are distributed in such a way that the wagons are placed at the quay in front of the ship or the shed where the goods have to be deposited, and very often these are immediately embarked. Those facilities which as a rule one does not find in other ports, and which bring manipulating costs down to the extreme minimum, at the same time make of Antwerp an immense goods station.

## Port of Antwerp



[Photo]

*View of 15-ton Loading Bridges, with Hoppers of 200-tons capacity.*

[Franz Haesen, Antwerp]



[Photo]

*The Royers Sea Lock, giving access to the Lefebvre Dock, was opened in 1909. Its width is 22 metres (72 ft. 2 in.), its length 180 metres (590 ft.), and its depth 10.50 metres (34 ft. 5 in.), at high water of mean tides.*

[Stampe and Vertongen, Antwerp]



[Photo]

*The Kattendijk Sea Lock, giving access to the Kattendijk Dock, was opened in 1860. Its width is 24.80 metres (81 ft. 4 in.), its length 110 metres (361 ft.) and its depth 7.20 metres (23 ft. 7 in.), at high water of mean tides.*

[Stampe and Vertongen, Antwerp]

## Port of Antwerp—continued

### Manual Labour.

The loading and unloading is done by skilled and well-trained workmen. Most of them are specialists in certain kinds of manipulations; there are special gangs, of which the picked men are hardly ever changed, for the handling of grain, wood, ore, coals, etc.

And then, thanks to the sheds along the quays, the sorting of goods and lots according to common destination are done during the loading operation, a thing which in most other ports has to be done on board ship.

As the ship can be moored directly along the quay, as well in the river as in the docks, the embarking can be effected very quickly, generally immediately after arrival of the merchandise, which offers a great advantage when the goods are of high value or liable easily to damage. The immediate consequence is a reduction of stevedoring, freight and insurance. Moreover, general harbour costs, so high in other ports, are at Antwerp, comprised in the freight, which is already very low.

### The "Nations."

We here have to mention one of the most curious characteristics of this Belgian port: the "Nations," as they are called, are corporations of local transport, which undertake the various operations of unloading, guarding, covering, stapling, and loading goods, that is, a series of manipulations which in other ports are done by as many different organisations, and therefore occasion higher expenses. Whoever visits the Port of Antwerp is familiar with the long low drays of the "Nations" drawn by superb Flemish horses.

### Regular Lines.

Antwerp outvies all other continental ports with regard to the number and the variety of destinations of regular steamship lines calling at the port. In the first place, Antwerp is a port of mixed cargoes: the abundance and variety of goods of every description attract ships of every type and tonnage. The port is a vast warehouse and a marvellously busy market. Having disembarked articles of food for the population and raw materials for the industries of Europe, ships very easily find freight of the most various description: light and weighty, goods of high value, finished products, and raw materials. The shipbrokers and forwarders have no trouble in grouping full cargoes, and they do so with perfect skill. In consequence of this abundance of freight, numerous regular lines have been created, arriving and starting on fixed days. At the present moment there are about 190 that choose Antwerp as terminus or port of call, which proves how great and continuous is the demand for tonnage for all the ports of the world.

To these 190 lines about 50 shipping companies must be added which periodically send ships hither, although not on fixed days, so that there are, in all, about 240 steamship lines touching Antwerp.

About 75 companies have a monthly service and 50 a weekly service starting from Antwerp; there are others, in very great number, having fortnightly departures, about 30 having two or three departures per week and even a few with a daily service.

When we examine the list of regular lines, only according to their destination, we can see that the Port of Antwerp is in direct and regular connection with all the maritime ports of the world:—

	Lines
Great Britain and Ireland (to London alone more than half-a-dozen)	31
North Sea Ports (Holland and Germany)	5
Baltic Ports	10
Denmark, Norway, Sweden	11
France (Atlantic Ocean)	8
Morocco	8
Mediterranean Ports and Adriatic	9
Levant	8
Black Sea	3
Spain	4
Portugal	5
West Africa	15
East Africa	9
South Africa	9
Atlantic: North America and Gulf of Mexico	18
Atlantic: South America	18
Central America and Antilles	9
Pacific: North America	7
Pacific: South America	8
British India	9
Far East	18
Dutch Indies	4
Australasia	11
Red Sea and Persian Gulf	2

### Hinterland.

The hinterland of the Port of Antwerp may be divided into two zones: the immediate hinterland, comprising Belgium, the

North and East of France, a part of Switzerland, the North of Italy, and Rhenish-Westphalia; the farther hinterland comprises the other parts of Germany, of Switzerland, Austria and the surrounding countries, as far as the Adriatic and the Black Sea.

The immediate hinterland, as we have pointed out, possesses the densest network of waterways and railroads; it is also the most populated and industrial part of the Continent.

Thence come these immense quantities of goods destined for exportation. One may say that Antwerp is the centre of the maritime traffic of the North of Europe.

But it is not superfluous to call attention to and insist upon the fact, that Antwerp owes its brilliant situation, for a great part, to the powerful development of Belgium's own industry and commerce, and that Belgian products form the basis of export of the Port of Antwerp: they amount to more than 50 per cent. of the total. The rest is offered by the foreign hinterland.

### Antwerp Assembling and Distributing Centre.

The extensive import trade is backed by Belgium's need for articles of food and raw materials (Belgium produces only 25 per cent. of its wants), as well as by the power and activity of Belgian banking business. Antwerp is an important market working with its own capital and greatly influencing international trade. As this market is chiefly concerned in importation and the natural situation of the Port of Antwerp is incomparably advantageous, the latter is an ideal distributing place for the whole of Europe, thanks to the numerous and easy communications with the interior. Besides, several American motor-car manufactories have established workshops here where cars are assembled for distribution over Europe.

### Statistics.

Here follow the statistics of inward tonnage of the Port of Antwerp at various periods during the last 34 years:—

Year	Ships	Tonnage
1900	5,244	6,691,791
1905	6,034	9,850,592
1910	6,770	12,651,153
1913	7,056	14,146,819
1914	4,302	8,618,908
1919	4,820	5,245,048
1920	7,698	10,858,926
1925	9,971	20,201,628
1929	11,582	24,325,103
1931	10,559	22,388,342
1932	9,407	19,666,678
1933	9,841	20,439,195

### Imports and Exports.

The quantity of goods traffic handled at the Port of Antwerp for the year 1933, exceeded that of 1932 by over 1,500,000 tons:

	1932	1933	Increase in 1933
Imports	9,325,082	10,038,102	713,020
Exports	8,058,127	8,898,772	840,645
Total	17,383,209	18,936,874	1,553,665

### Port Revenue.

The revenue figures for the Port of Antwerp for 1933 showed a considerable decrease over those for 1932. The decrease amounted to 2,296,657 francs, being chiefly attributable to the policy of the Harbour Authorities, who, in order to meet the needs of trade, bring tariffs to as low a level as possible.

The revenue for the port for 1932 amounted to 108,128,673 francs, and the figures for 1933 were 105,832,106 francs.

The largest decreases were shown by revenue from sheds and quay dues, which was over 4,000,000 francs short of 1932; revenue from floating grain elevators which was over 2,000,000 francs less, and revenue from rents of sheds which was over 1,300,000 francs less.

### Conclusion.

From the above, one may conclude that Antwerp may confidently look forward to the future.

All the advantages of the Port of Antwerp, whatever be their character, seem natural and proper to that harbour; for, notwithstanding wars, treaties, tariffs, and tolls, Antwerp has always risen with renewed vigour over a crisis, and, after a short violent struggle, attained once again an astounding prosperity.

The extension works carried out in recent years have been justified, and the realisation of new projects will further enhance the attractiveness of the Port of Antwerp.

## Notes from the North

### Mersey Ferry to go.

ONE of the ancient landmarks of the River Mersey, the Eastham Ferry Pier, has been dismantled. This landing place has been frequently changed as sandbanks increased and tides altered. It is probable that the oldest landing slip was the one recently discovered behind Job's Ferry. The square sandstone erection, known as Job's Ferry, has undergone great changes during the last fifty years. The action of the tide has worn down the surrounding wall on the south side, and the encroaching waves have revealed steps hewn out of the solid rock at the back of the edifice. Local observers, noticing this, determined to do a little excavation, some influenced by purely antiquarian motives, others with visions of buried treasure in a smuggler's cave, set to work with pick, spade and saw, for above the steps were several feet of earth interlaced with three roots. They were rewarded by the discovery of twelve splendidly-cut stone steps, which they had reason to believe were many hundreds of years old. No treasure trove in the shape of gold nuggets or jewels, yet a real treasure in a valuable clue to a little more of the absorbingly interesting history of the locality. A slip built of stone, and lengthened at an angle by timber work sloping downwards from the shore, so that a landing could be effected at all states of the tide, was of later date.

Obviously, the Eastham Ferry of the old days was a paying concern, for it was current news, in 1830, that "Old Peggy Smith," who ran the steamers from Liverpool, retired from the business with a fortune of £30,000.

The iron pier just removed was erected, in 1874, by Messrs. Thompson and Gough.

### Morecambe Old Harbour.

It has been reported to the Old Harbour Committee of Morecambe Town Council that the original estimate for the construction of the sea wall will be exceeded by a considerable amount.

In the scheme submitted to the Ministry of Health in August, 1933, the foundations of the northerly sea wall were shown at a depth of three feet, and the estimated cost of the work was £28,000, but after trial borings had been taken it was found necessary, on account of the nature of the ground, to increase the depth of these foundations to six feet. Though the revised plans were submitted to the Ministry in December, 1933, however, the amount of the estimate was not increased. Then, at the request of the Ministry, a firm of consulting engineers were engaged to advise on the ferro-concrete work in connection with both the swimming baths and the sea walls, and the amended design necessitated much additional excavation and reinforced concrete.

The borough surveyor and the firm of consulting engineers have been instructed by the committee to prepare a report of the estimated additional cost, and the extra expenditure incurred to date, with an explanation of the causes.

### The Port of Preston.

The Port of Preston reports increased imports during the past year, principally in stone, motor spirit, wood pulp, timber, bitumen, grain, cement, china clay and cattle. It has been its most successful year from many points of view. To accommodate the large imports of timber, additional storage sheds have been erected, and to deal with the stock, three new cranes—two hydraulic and one steam—have also been installed. Additional private railway wagons for internal use have also been acquired, and a new grain elevator and silo was brought into use during the year. The latter can accommodate 3,500 tons of grain, and can pump such from a steamer at the rate of 120 tons per hour.

### Bidston Dock Quay.

Mersey Docks and Harbour Board has approved a recommendation of the Works Committee to construct a quay at Bidston Dock, Birkenhead, at an estimated cost of £29,000.

Mr. Edmund Gardner, chairman of the Works Committee, told the Board it was anticipated that the work of constructing the quay would take about seven months. The number of men employed might reach two hundred, and the wages paid would be approximately in the region of £10,000 to £12,000. The Board were in negotiation with two companies for the letting of land at the north side of the Bidston Dock. One of the firms in negotiation with the Dock Board is Messrs. Timber and Wood, Ltd., importers, who at present have premises on the Wallasey side of the West Float. It is believed that this firm is anxious to extend its premises to the north side of the Bidston Dock, but before doing so naturally wishes to be provided with the usual quayside facilities.

The existence of a dock having a fully-equipped quayside with crane and railway tracks, will naturally provide a far greater

inducement to manufacturers in search of new sites than a dock surrounded only by derelict land.

The scheme marks a further stage in the development which was inaugurated in 1930, when the construction of the new Bidston Dock was commenced. The work was completed at a cost of £700,000 in April, 1933. The site of the dock and its surrounding land is well over a hundred acres in extent, and although the basin is 1,000 ft. long, further extensions which may almost treble its length, will ultimately be made, if and when industrial development justifies it.

### £30,000 for Sea Defences.

Rhyl Urban Council is seeking powers to borrow £30,000 to strengthen the sea defences. It is estimated that £17,200 will be required for training the lower reaches of the River Clwyd by a sheet-piled groyne. A timber groyne is to be erected on the east side of Horton's Nose, a long spit of land and gravel which interferes with the direction of the river's flow, and this, with the removal of the material, will cost £2,650. Steps to safeguard the promenade wall towards its western extremity, will cost another £8,700, making an estimated total of £28,550.

### Dock Warehousing Charges.

Mersey Docks and Harbour Board has agreed to a reduction in the warehouse rates and charges. A deduction of four per cent. is now being made from all the rates with the exception of: rent; consolidated rates on tobacco; rates on wine and spirits; collecting rates on bulk grain intended for storage at the Waterloo and Birkenhead grain warehouses only; charges for the use of gear, etc., including hydraulic, etc., or hand cranes; the allowance when grain can be delivered from warehouse in bulk form without filling into sacks or use of machinery being required, etc.; minimum charges; charges for the issue of warrants; survey fees, etc. A deduction of two per cent. is made from the consolidated rates on tobacco.

The following deductions are being made from the rates on wines and spirits: four per cent. from the quay delivery rates and uncasing and re-casing rates on casks; and from the quay delivery rates and opening rates on cases, etc.;  $2\frac{1}{2}$  per cent. from all other rates.

### Red Pier, Douglas, Isle of Man.

Work is still in progress on the construction of a new pier at Douglas, I.O.M., on which £200,000 has already been spent. It is not likely that the work will be completed before the summer of 1936. When the work was first commenced in the spring of 1930 it was calculated that seven to ten years would be required to complete it. The total cost was estimated at £252,000.

The main feature of the new harbour development is the extension of the Red Pier by 160 ft. and a widening to 70 ft.—20 ft. wider than Victoria Pier. Some idea of the greatness of the new structure may be gleaned from the fact that from the foundation to the upper wall will be 49 ft. It will be limestone faced, will be rounded off at the extremity like the Victoria Pier, and the step arrangements will be identical with those on the Victoria Pier. An open-work viaduct of reinforced concrete has been built on the north side of the pier, and will be approached from the extended part by means of a rampart. The viaduct crosses the beach behind the Imperial buildings, and alongside the Steam Packet Co.'s warehouse, joining the Victoria Pier at its base. The cost of the viaduct was about £70,000. The structural alterations to Fort Anne Jetty have been the removal of the rounded end for a length of 30 ft., and when the extension works are complete timber dolphins will be erected on the Fort Anne side, running parallel with the extended pier. The object of this construction is to fend off shipping from the shoal water at the Fort Anne beach. The demand for more berthage will be met by the provision of two berths with a depth of 15 ft. of water at low-water spring tides—which is more than ample depth for the largest vessels of the Steam Packet Co. The berth on the south side of the extension will be so sheltered in all states of weather that it will obviate the necessity of steamers going to Peel in bad weather.

The number of 15-ton blocks used in the construction of the extended works is 3,250, with about 750 additional miscellaneous shaped blocks. They have been made at the rate of four a day in the Harbour Board's yard at the Battery Pier, and the mixture employed was cement and shingle—the ratio being one to eight. They are 11 ft. long, 5 ft. 6 in. broad and 4 ft. 6 in. deep. They were conveyed from the Battery Pier to the Red Pier by barge and swung into position by a huge Hercules crane—the biggest ever erected in the island. The foundation blocks are sunk into a concrete floor 22 ft. wide on each side of the pier, and the successive blocks are laid in a series of varying patterns to ensure that every joint is concealed.

## Notes from the North—continued

## Isle of Man Pier Repairs.

Isle of Man, Tynwald, is spending £2,500 on repairing a portion of the extension made in 1913 on the south side of the Victoria Pier. This is built on reinforced concrete pylons, but has got into a bad state of repair owing to the steel bursting through the concrete in places, and to the fact that when it was first built, a sufficient covering of cement was not put on the steel reinforcement. It is expected that the complete scheme will cost between £5,000 and £6,000.

The work began in November, the cement being sprayed upon the pylons by means of a hose, through which the cement is pumped by compressed air. First of all, the original work is chipped to locate the bad portions, and then it is thoroughly cleaned and washed down with a blast of air and water from a hose applied under pressure. Grips are then put in to hold new steel reinforcement, fixed securely round each pylon. Compressed air is obtained from an Ingersoll Rand compressor, which consists of a four-cylinder engine driving the compressor, and which pumps the air into a receiving tank at a pressure of 40 lbs. per sq. in. From here, the compressed air passes through a "cement gun," operated by means of a valve to ensure a three-to-one mix.

There is a separate water pipe which follows the other hose, but the two are connected at the end by means of a nozzle, and there is a water valve affixed so that the flow of water can be regulated to obtain the right consistency. The water does not meet the cement till it reaches the nozzle.

The original concrete which was used on the pier was porous and affected by the action of the air, causing corrosion of the

reinforced steelwork underneath the concrete. Concrete applied by this process, it is stated, is absolutely watertight and airtight, protecting the reinforcement completely.

When completed, the pylons will be covered by an extra coating of 1½ ins. of concrete in addition to new reinforcement, and the whole structure will be substantially stronger and more permanent. The mixture sets in about three or four hours.

## Obituary.

Mr. Henry Ashman Reed, consulting engineer to the Manchester Ship Canal, died on 21st January, at the age of 68.

He was born at Bristol, and articled to Charles Richardson during the construction of the Severn and Patchway Tunnels. He was contractors' engineer in connection with the construction of the Manchester Ship Canal, the Great Central Railway extension to London in 1895, the Gibraltar docks, and the Southampton deep-water dock in 1907.

Before his Manchester appointment in 1912, Mr. Reed had been an engineer to the contractors for the construction of the canal. He was responsible for much important construction work, including the deepening of the lower reaches of the canal and the construction of Stanlow Oil Dock and No. 2 grain elevator, which cost, in all, about £3,000,000. Mr. Reed retired in 1930, when he was appointed consulting engineer to the Ship Canal.

He was a British delegate at the Navigation Congresses held in Cairo in 1927 and Venice in 1931, and for many years had been a member of the International Technical Commission of the Suez Canal.

## Aden Port Trust

The returns of shipping using the Port of Aden for the month of November, 1934, are as follows:—

	No.	Tonnage
Merchant Vessels over 200 tons ...	141	604,737
"    under 200 tons ...	1	162
Government Vessels ...	14	21,621
Dhows ...	105	3,689
PERIM.		
Merchant Vessels over 200 tons ...	23	72,790

The total value of both imports and exports together was Rs. 75,75,000/-, as compared with Rs. 77,22,000/- for the corresponding month last year.

Imports during the month were above those for November, 1933, in the case of coffee, raw hides, seeds, sugar, unmanufactured and manufactured tobacco; and below, in the case of grain, pulse and flour, gums and resins, hardware, raw skins, grey, white and printed or dyed piece goods, twist and yarn and private treasure.

## TRADE OF THE PORT.

Article.	Unit	Imports		Exports	
		Quantity.	Value Rs.	Quantity.	Value Rs.
Coal ...	Tons	0	0	0	0
Coffee ...	Cwts.	5,709	1,66,993	5,567	2,04,829
Grain, Pulse and Flour ...	"	31,615	1,63,812	30,466	1,37,921
Gums and Resins ...	"	952	15,834	1,349	20,381
Hardware ...	"	0	20,106	0	24,639
Hides, raw ...	No.	2,834	1,775	11,040	18,792
Oil, Fuel ...	Tons	66,631	16,65,775	0	0
" Kerosene ...	Gls.	18,718	14,464	3,128	2,151
" Petrol ...	"	30,269	26,075	1,128	1,128
Salt ...	Tons	0	0	37,100	3,73,650
Seeds ...	Cwts.	4,905	40,364	1,434	9,773
Skins, raw ...	No.	368,553	1,65,518	543,805	3,73,041
Sugar ...	Cwts.	27,294	1,32,877	23,628	1,10,596
Textiles—					
Piece Goods, Grey ...	Yds.	3,490,227	4,40,282	3,068,140	3,93,065
" White ...	"	348,163	59,027	330,050	56,588
" Printed or Dyed ...	"	1,101,317	2,09,962	1,399,528	2,79,092
Twist and Yarn ...	Lbs.	204,940	94,908	133,608	60,875
Tobacco, Unmanufactured ...	"	412,524	51,959	578,814	1,06,491
" Manufactured ...	"	70,822	48,266	35,290	25,817
Other Articles ...	No. of Pkges.	63,477	10,84,055	25,173	4,36,873
Treasure, Private ...	"	0	2,01,260	0	3,36,488
Total ...	—	—	46,03,312	—	29,72,190

The number of merchant vessels over 200 tons that used the Port in November, 1934, was 141, as compared with 131 in the corresponding month last year, and the total tonnage was 605,000, as compared with 574,000.

Excluding coal, salt, fuel oil, and Military and Naval Stores and transshipment cargo, the total tonnage of imports in the month was 8,500, and of exports 6,300, as compared with 9,200 and 6,000 respectively for the corresponding month last year.

The total value of imports, excluding Government Stores, was Rs. 46,03,000/-, as compared with Rs. 48,08,000/- for November, 1933, and of exports Rs. 29,72,000/-, as compared with Rs. 29,14,000/-.

Exports were above those for November, 1933, in the case of coffee, raw hides, seeds, sugar, white, printed or dyed piece goods, twist and yarn, unmanufactured and manufactured tobacco, and private treasure; and below, in the case of grain, pulse and flour, gums and resins, hardware, raw skins, and grey piece goods.

## Appointment.

Colonel Charles F. Hitchins, D.S.O., M.I. Mec. E., M.I.N.A., has been appointed to the Board of the Skinninggrove Iron Company, Limited, to fill the vacancy caused by the retirement of Mr. Claud E. Pease.

## Notes from Far Eastern Ports

### Ceylon

#### Colombo Harbour losing Popularity.

THE popularity of Colombo Harbour is steadily going down. Fewer ships are calling. In the bunkering trade, ports like Sabang and Padang, in the Dutch East Indies, compete very successfully with the Colombo rates.

That was the report made at the half-yearly general meeting of the Indian Mercantile Chamber of Ceylon. The subject was raised when the meeting considered the notice from the Chairman of the Colombo Port Commission, asking for suggestions to increase the popularity of Colombo Harbour. An informal discussion then took place, and on the proposal of a member a Committee was appointed to go into the question fully.

#### Colombo Port's Revenue.

The total revenue derived from the Port of Colombo in November amounted to Rs. 429,067. Of this amount, harbour dues came to Rs. 265,952, warehouse rent Rs. 64,791, and oil installations Rs. 48,382. The revenue in October was better, Rs. 519,344 having been collected in that month.

#### Coal Bunkering at Colombo.

There was a very slight improvement in the amount of coal-bunkering done at Colombo in the month of November.

According to Customs Returns, just available, ships were bunkered to the extent of 21,093 tons, of the value of Rs. 550,224, against 20,302 tons (valued at Rs. 542,135) in October, or 15,084 tons (valued at Rs. 350,150) in November, 1933.

For the eleven months of 1934 coal-bunkers amounted to 211,591 tons, valued at Rs. 542,160, while for the corresponding period of 1933 the amount was 201,378 tons, valued at Rs. 4,923,733.

#### Increase Due to Higher Tonnage.

The slight improvement in the coal-bunkering figures does not suggest that Colombo is regaining, even in a small way, her position as a coal port in the East. The increase is only to be expected, in view of the better conditions of trade, and the consequent rise in tonnage on the world's routes.

As a matter of fact, when the tonnage figures are considered along with the coal-bunkering business, it will be seen that the rise in this direction can by no means be considered satisfactory. The shipping statistics for November, of 1934 and of 1933, shows that this year twenty ships called to coal and oil, while last year the number was fifteen. In other words, only about 10,000 tons more coal was handled in November, 1934, although more ships called.

For the eleven months of 1934, Colombo Port was visited by 2,625 ships, with a tonnage of 11,088,057, while for the same period of 1933, the number of callers was 2,439, with a tonnage of 10,429,938.

#### Oil Bunkering Increase.

On the other hand, the extent of oil-bunkering appears to have increased. During the eleven months of 1934 ships using oil had taken 56,815,755 gallons, valued at Rs. 10,226,897, while in the same period of 1933 the amount supplied was 52,434,816, valued at Rs. 9,438,271.

#### A Colombo Record.

The total number of entries passed at the Colombo Customs for cargo imported during the month of November, 1934, was 9,502, which is the highest figure on record.

#### Miscellaneous.

The appointment of Mr. F. E. Bland, of the Ceylon Wharfage Co., Ltd., Colombo, as a member of the Colombo Port Commission has been confirmed by the Ministry of Communications and Works.

The supply and erection of a 30-ton steam travelling crane at Dockside is contemplated by the Harbour Engineer, and his estimate of Rs. 87,500 for half of its cost has received the necessary approval.

### India

#### Calcutta's Foreign Trade.

Foreign trade through the Port of Calcutta in November, 1934, had a slight set-back in the improvement recorded in the previous month, the value receding from Rs. 3.19 crores to

Rs. 3.05 crores, against Rs. 2.81 crores in November, 1933. Exports, however, advanced from Rs. 5.4 crores to Rs. 5.94 crores, against Rs. 6.11 crores in November, 1933.

#### Cochin and P. and O. Ships.

It is understood that the Peninsular and Oriental Company have under consideration at present the inclusion of Cochin, the South Indian port, in the itinerary of their Eastern ships. It is further understood that the Company's "Comorin" will inaugurate this new service, probably this month, if the proposal materialises.

Should the P. and O. decide to include Cochin, there will be at least three well-known companies using that port next year, Bibby and City Lines being the others.

#### Foreign Trade of Karachi.

The statistics of the foreign trade of the Port of Karachi for November, 1934, show that the total value of imports amounted to Rs. 1.46 crores, an increase of Rs. 30 lakhs, and that of exports to Rs. 85 lakhs, an increase of Rs. 16 lakhs, as compared with the figures for November, 1933.

#### Vessels entering Indian Ports.

In the month of November, 1934, there were 269 arrivals and 267 sailings with cargoes in and from the various Ports of India, as against 239 and 249, respectively, in November, 1933.

The tonnage (net register tonnage) of vessels entered with cargoes at ports in British India from foreign countries and British Possessions during the eight months ended November, 1934, amounted to 5,171,591, and the tonnage (net register tonnage) cleared to 5,274,932, as against 4,747,474 tons entered and 5,045,381 tons cleared during the corresponding period of 1933.

#### Port of Rangoon's Foreign Trade.

The foreign import trade through the Port of Rangoon increased from Rs. 65.85 lakhs to Rs. 82.65 lakhs during the month of October, while the foreign export trade fell from Rs. 1,35.25 lakhs to Rs. 1,08.19 lakhs.

The progressive total of import, export, foreign and coasting trade combined for the seven months ending October, 1934, increased from Rs. 35,16.31 lakhs to Rs. 39,30.97 lakhs.

The progressive total of foreign trade, both import and export, for the seven months ending October, 1934, decreased from Rs. 14,92.42 lakhs to Rs. 13,93.61 lakhs, while that of the coasting trade of both import and export increased from Rs. 20,23.89 lakhs to Rs. 25,37.37 lakhs.

### Singapore

#### Singapore Harbour.

The aggregate trade dealt with at the Singapore Harbour wharves during the last year was 13 per cent. more than the previous year.

The number of vessels berthed at the wharves and total net registered tonnage for 1933 was 2,863 vessels, 8,765,920 tonnage, and for 1934 was 2,967 vessels and 9,127,142 tonnage.

The tonnage of inward cargo dealt with in 1934 was 64,301 fuel oil; 147,501 coal; 946,887 general cargo; 1,158,689 total. Outward cargo tonnage 60,097 fuel oil; 191,153 coal; 1,037,112 general cargo; 1,288,362 total; 2,447,051 grand total.

The tonnage of cargo and coal handled by the lighterage department during the year was 70,770 tons, as compared with 60,480 tons for the preceding year.

#### Trade Handled at Wharves.

The trade handled at the wharves during the year was, in the aggregate, 2,447,051 tons, or 13 per cent. more than that for the previous year.

General cargo inward increased by 163,122 tons, or 21 per cent., whilst general cargo outward increased by 178,725 tons, or 21 per cent. Coal inward decreased by 31,679 tons, or 18 per cent., but coal outward increased by 6,831 tons, or 4 per cent. Fuel oil inward decreased by 22,186 tons, or 26 per cent., and outward by 11,171 tons, or 16 per cent.

The average percentage quayage occupied at the Singapore Harbour during the year was 63 per cent., as compared with 57 per cent., and the average length of quayage occupied per vessel was 406 ft., the figure for the previous year being 403 ft.

The percentage of motor and oil-burning vessels using the wharves was 62 per cent., as compared with 56 per cent. during the previous year.

## Clyde Navigation Trust

### A Spirited Debate.

AT the last monthly meeting of the Clyde Navigation Trustees held on the 8th January, further evidence was forthcoming as to the increased interest being taken in the affairs of the Clyde Trust by new members elected in November last.

An interesting point to all Port Authorities as to procedure raised a spirited debate. When the minutes came up for adoption, Mr. P. J. Dollan said that he understood that a meeting of the General Purposes Committee had been held at which a proposal had been submitted that a grant of £2,500 should be made to Mr. James Macfarlane, retiring General Manager and Secretary, in addition to his superannuation allowance of £1,545. No reference appeared in the minutes as to this meeting having been held, and he wished to know why the meeting was not minuted and the proposal not recorded in the minutes for the information of members.

In reply, the Chairman, Mr. W. F. Robertson, stated that the matter had been before the General Purposes Committee only in an informal way.

Mr. Dollan inquired whether the Committee Meeting in question had been called by statutory notice, and whether this matter had been placed upon the Agenda, and on receiving a reply in the affirmative, Mr. Dollan protested strongly that it was not only unusual but irregular for the Chairman of any public authority responsible for the expenditure of public funds to bring a question involving an expenditure of £2,500 as a gift to an ex-employee before a meeting and simply brush it aside as of no consequence. He protested against a public authority of which he was a member transacting business in that way, and requested that a minute of the meeting be prepared and submitted to the next meeting of the Trust in the usual way so that members would know what had happened in Committee.

Mr. John Stewart interposed that as a member of the Committee, he had agreed to no reference of the subject being made in the minutes because it had been turned down.

Mr. Dollan replied that he must insist that all matters brought before Committees, who had been called to meeting by statutory notice, and which had been placed upon the agenda, should come before the Trust in a proper form of minute. He protested against this hole-in-corner method of conducting business, and insisted that members were entitled to the fullest information on all matters coming before any Committee of the Trust.

Mr. Cuthbert, the Deputy-Chairman, pointed out that as there was no formal motion before the Committee and no decision arrived at, it was not therefore necessary to have any minute. He thought it would be inadvisable if such matters were minutes.

Mr. Hector McNeill also added his protest against what he termed a most irregular proceeding, and wished to be informed as to how many other minutes of the General Purposes Com-

mittee dealing with important subjects had been suppressed during the past few years, with the result that members of the Trust were kept in ignorance of matters upon which they were entitled to be informed.

Mr. Dollan, further protesting against the procedure, indicated that a private unofficial meeting of certain members had been previously held, when their support had been canvassed for a proposed grant, but that it had evidently been abandoned because sufficient support was not forthcoming. He was not, however, concerned with this at the moment, but was concerned that elected members to the Trust, responsible for carrying on its affairs, should be left in the dark and treated in this irregular manner.

After further discussion, the Chairman, in reply, said they were endeavouring to run the affairs of the Trust properly and fairly, and he was not prepared at the moment to give Mr. Dollan complete assurance as to what he asked for. There had been no specific motion made in connection with the matter, and therefore there was no decision to report.

Mr. Dollan again pressed that the matter should be minuted and that whether a favourable decision on any question was arrived at or not, if the said matter had been placed upon the agenda calling the meeting it should be properly dealt with in the minutes as to how it was disposed of.

### Increased Revenue.

Speaking on the trade and revenue position for the past six months, Mr. Robertson said that it was with pleasure one looked forward to-day with the knowledge that the work of the Trust, in common with the City's affairs, was rather better than it had been for some years past.

So far as they were available, the figures showed that the revenue of the Trust for the last six months of 1934 was £430,293, against £375,208—roughly, an increase of £55,000 for the six months. This sum of £55,000 was approximately made up as follows: Dues on goods, £22,000; vessels, £12,500; craneage and relative services, £11,000; graving docks, £4,700; granary, £2,100.

Both coal and minerals had substantially improved.

In the efforts being made to foster trade with the Dominions, further progress had been made, and in the case of South Africa he was glad to report substantial progress during the past six months. For the first time, they had had nine refrigerated vessels during this period, bringing direct trade to the Clyde in South African fruits, and thereby opening up new business.

Speaking on the question of wages and conditions, Mr. Robertson indicated that the General Purposes Committee contemplated considering this question at an early meeting.

The Chairman, on behalf of the Trust, congratulated the Lord Provost, Sir Alexander B. Swan, on his knighthood accorded to him in the King's New Year Honours, and extended a welcome to Mr. John Wilson, who was succeeding Mr. Macfarlane.

## The Port of Halifax

### Review of Port Traffic, November, 1934

#### Shipping.

During the month of November, 1934, a total of 633 vessels entered and cleared the Port of Halifax, as compared to 576 for November, 1933, and 654 for November, 1932.

The net registered tonnage is reported as 593,673 tons, as compared to 634,762 tons for November, 1933, and 483,228 tons for November, 1932.

The number of vessels engaged in the Trans Oceanic Service entering and clearing during the month of November, 1934, is reported at 143, as compared to 156 for November, 1933, and 135 for November, 1932.

The number of vessels engaged in the coastwise trade entering and clearing during the month of November, 1934, is reported at 490, as compared to 420 for November, 1933, and 519 for November, 1932.

Since January 1st, 1934, the total number of vessels arriving and departing at the Port of Halifax is reported at 5,014, as compared to 5,400 for the same period of 1933, and 5,336 for the first eleven months of 1932.

#### Cargo Tonnage.

The total cargo tonnage handled inward and outward during November, 1934, is reported at 130,595 tons, as compared to 139,531 tons for November, 1933, and 96,114 tons for November, 1932.

Since January 1st, 1934, the total cargo handled inward and outward amounted to 1,873,783, as compared to 1,536,584 tons for the first eleven months of 1933.

#### Passengers and Mail.

The total number of passengers landed and embarked at the Port of Halifax during the month of November, 1934, is reported at 735, as compared to 798 for November, 1933.

Since January 1st, the passenger traffic is reported at 23,817, as compared to 29,818 for 1933.

The quantity of mail handled during the month of November, 1934, is reported at 5,451 bags, as compared to 3,157 bags for November, 1933.

Since January 1st, the mail traffic is reported at 82,625 bags, as compared to 71,130 bags for 1933.

#### Wallasey Foreshore Work.

Wallasey Corporation has obtained sanction to borrow £147,376 for the completion of the second half of the New Brighton promenade extension and development.

Thus, despite recent opposition by a section of local rate-payers, the full £1,000,000 scheme is to be proceeded with. The new expenditure is necessitated largely by the Ministry's insistence that the sea defence wall between the Red Noses and a point 300 yds. west of Harrison Drive should be made stronger than was stipulated in the original specification.

Work will be begun on the site immediately, and it is estimated that not less than £200,000 will be paid in wages, and that 250 workmen will be engaged.

## Port of London Authority

### Sir David J. Owen on the Port of London.

Sir David J. Owen, General Manager, Port of London Authority, discussing the origin of London in the course of an address to members of the Chartered Institute of Secretaries on January 10th, said that "the first recorded reference to London is the oft-quoted one of Tacitus, who nearly 1,900 years ago described the place under the Latinised form of its name, Londinium, as the chief residence of merchants and the great mart of trade and commerce." Following an historical sketch of the growth of the Port of London to the pre-eminent position it has now held for many centuries, Sir David dealt with the circumstances which led up to the establishment of the Port of London Authority, and elaborated some of the more outstanding achievements of that body. "For centuries London has been the principal port in the British Isles, and its trade reached relatively great dimensions even in early times, but at no other period in its long history did its business approach to anything like the volume it has attained during the past quarter of a century, under the sway of the Port Authority. I think it is safe to say that the present volume of its trade could not have been accommodated if some such body as the Port of London Authority had not been formed to cope with the situation. This clearly justifies the act of the Legislature in constituting the Authority."

As regards the present volume of traffic through the Port of London, he said: "Particulars are not available as to the value of the merchandise imported and exported through London from and to coasting ports, but the Board of Trade publish information in regard to the overseas trade. The latest returns are for the year ended 31st December, 1933, and show that in terms of value London dealt with 37.2 per cent. of the trade of the whole country, made up of 42.4 per cent. of the imports, 25.1 per cent. of the exports, and 56.6 per cent. of the re-export and entrepôt trade. Last year the value of London's overseas trade exceeded the total of the next four most important ports of the country."

Discussing the circumstances to which the Port's enormous trade is attributable, Sir David remarked that "within twenty-five miles of the docks of the Port of London there is a population of nearly 9,500,000 people, in addition to a large floating population of business men and tourists. Within 100 miles of the docks there is a population of more than 16,000,000. London therefore absorbs enormous quantities of the foodstuffs and materials that pour into the Port. A great deal more enters the Port, however, than is required by the immediate market at its doors, and one of the factors that has made London so great is that it is a great international market, the financial centre of the world, and an enormous distributing centre for the United Kingdom as well as for many other parts of the world." After alluding to the great industrial development in recent years in London and its vicinity, Sir David concluded with further references to the Port of London Authority.

"The duty of the Port Authority is clear," he said, "they must foster the trade of the Port by improving and extending the facilities required. Since the Port of London Authority is a Public Trust dedicated to Public Service, carried on by representatives of the various interests vitally concerned in its welfare, it may confidently be relied upon to continue to function in the most efficient way possible."

The lecture was profusely illustrated with lantern slides.

### London's Ocean Terminus.

Over half-a-million more tons of shipping used the Passenger Landing Stage at Tilbury in 1934 than in 1933. During the past twelve months 546 vessels, representing 5,785,708 tons gross, embarked or disembarked 111,331 passengers.

The increasing habit of visiting tourists and British holiday-makers of using their own motor cars when abroad is shown by the increasing number of cars dealt with at the Landing Stage. An increased use was also made of the "ship-to-shore" telephone service.

Over 19,000 bags of mail and over 300,000 pieces of baggage were landed or shipped. Passengers' "effects" included such odd items as four kangaroos, one wallaby, one emu, cats, dogs, a caravan, birds and livestock, and cases of natural history specimens.

### London's Shipping.

During the week ended December 28th, 773 vessels, representing 730,895 net register tons, used the Port of London. 343 vessels (567,032 net register tons) were to and from Empire and Foreign Ports, and 430 vessels (163,863 net register tons) were engaged in coastwise traffic.

Twenty-six timber-laden vessels docked with 45,766 tons of softwood.

During the week ended January 4th, 946 vessels, representing 932,660 net register tons, used the Port of London. 409 vessels (715,376 net register tons) were to and from Empire and Foreign Ports, and 537 vessels (217,284 net register tons) were engaged in coastwise traffic.

Fifteen timber-laden vessels docked with 26,702 tons of softwood.

During the week ended January 11th, 1,046 vessels, representing 940,022 net register tons, used the Port of London. 424 vessels (725,872 net register tons) were to and from Empire and Foreign Ports, and 622 vessels (214,150 net register tons) were engaged in coastwise traffic.

Nineteen timber-laden vessels docked with 24,321 tons of softwood.

During the week ended January 18th, 942 vessels, representing 915,337 net register tons, used the Port of London. 438 vessels (695,690 net register tons) were to and from Empire and Foreign Ports, and 504 vessels (219,647 net register tons) were engaged in coastwise traffic.

Twenty timber-laden vessels docked with 24,877 tons of softwood.

During the week ended January 25th, 981 vessels, representing 1,044,614 net register tons, used the Port of London. 493 vessels (837,341 net register tons) were to and from Empire and Foreign Ports, and 488 vessels (207,303 net register tons) were engaged in coastwise traffic.

Fifteen timber-laden vessels docked with 18,177 tons of softwood.

## The Port of Amsterdam

The position of the Port of Amsterdam in regard to number of vessels and tonnage and to goods traffic arrived and sailed, as compared with the corresponding figures of last year, is as follows:—

### SEAGOING VESSELS AND TONNAGE.

		ARRIVALS				SAILINGS			
		No.	Per Cent.	N.R.T.	Per Cent.	No.	Per Cent.	N.R.T.	Per Cent.
Dec. 1933	...	289		409,441		283		419,516	
" 1934	...	252		381,579		244		363,710	
		-37	-12.80	-27,862	-6.80	-39	-13.78	-55,806	-13.30
Nov. 1934	...	268		401,252		267		409,471	
Dec. 1934	...	252		381,579		244		363,710	
		-16	-5.97	-19,673	-4.90	-23	-8.61	-45,761	-11.18
Jan.-Dec. 1933	3,313			4,634,706		3,333		4,722,900	
" 1934	3,222			4,638,017		3,236		4,654,457	
		-91	-2.75	+3,311	+0.07	-97	-2.91	-68,443	-1.4

### SEAGOING GOODS TRAFFIC.

(In Tons of 1000 Kilos\*).

		1 Import	2 Transit incl. in col. 1	3 Export	4 Transit incl. in col. 3	5 Total col. 1 & 3
Nov. 1933	...	330,836	61,418	137,712	47,312	468,546
" 1934	...	326,456	74,793	157,307	75,070	483,763
		-4,380	+13,375	+19,595	+27,758	+15,215
		-13.2%	+21.78%	+14.23%	+58.67%	+3.25%
Oct. 1934	...	325,310	75,624	153,928	71,441	479,238
Nov. 1934	...	326,456	74,793	157,307	75,070	483,763
		+1,146	-831	+3,379	+3,629	+4,525
		+0.35%	-1.1%	+2.19%	+5.08%	+0.94%
Jan.-Nov. 1933	...	3,127,030	630,324	1,412,888	531,485	4,539,918
" 1934	...	3,381,792	671,479	1,537,223	651,675	4,919,015
		+254,762	+41,155	+124,335	+120,190	+379,097
		+8.15%	+6.53%	+8.80%	+22.61%	+8.35%

\* These figures have been taken from the monthly statistics of the Central Bureau, The Hague, Holland.

Classified according to flag, the number of vessels which entered the Port of Amsterdam during December, 1934, was: Dutch, 126; Great Britain, 45; German, 20; Swedish, 18; Norwegian, 16; Danish, 3; French, 1; Greek, 3; Spanish, 1; Lettish, 2; Finnish, 5; Polish, 1; Italian, 2; Lithuanian, 1; Belgian, 2; Dantzic, 1; Russian, 5.

Vessels laid-up at Amsterdam: 1st December, 1934—15 vessels, measuring 96,155 tons gross; 1st January, 1934—19 vessels, measuring 72,538 tons gross; 1st January, 1935—14 vessels, measuring 94,437 tons gross.

## Lloyd's Register Shipbuilding Returns for the Quarter ended 31st December, 1934

THE statistics issued by Lloyd's Register of Shipping regarding merchant vessels under construction at the end of December last show that in Great Britain and Ireland there is a decrease of 7,462 tons in the work in hand, as compared with the figures for the previous quarter. The present total—596,834 tons—is, however, 265,293 tons (80 per cent.) greater than the tonnage which was being built at the end of December, 1933, and exceeds the aggregate tonnage under construction in the seven leading countries abroad.

While the decline since the end of September in the quarterly total of tonnage in course of construction is the first check to the upward tendency noted since the beginning of 1933, the actual reduction is relatively insignificant. At the end of December, the tonnage on which work was suspended amounted to 26,688 tons, being composed entirely of steamers.

About 81,000 tons—13.5 per cent. of the tonnage now being built in this country—are intended for registration abroad or for sale.

The tonnage now under construction Abroad\*—654,888 tons—is about 52,000 tons less than the work which was in hand at the end of September, 1934, but is nevertheless 229,000 tons greater than the figure for December, 1933. Tonnage, included in the total in hand abroad, on which work has been suspended, amounts to 2,800 tons of steamers and 6,378 tons of motor-ships.

The leading countries abroad are:—Germany, 139,611 tons; France, 120,952 tons; Japan, 104,640 tons; Denmark, 78,630 tons; Sweden, 60,140 tons; and Holland, 48,333 tons.

The total tonnage under construction in the World\* amounts to 1,251,722 tons, of which 47.7 per cent. is being built in Great Britain and Ireland, and 52.3 per cent. abroad. The World total shows a decline of 60,000 tons from the figures at the end of September last, but is 491,445 tons (65 per cent.) greater than the tonnage being built at the end of December, 1933.

In Great Britain and Ireland, 93,428 tons were commenced during the last three months, showing an increase of 16,517 tons compared with the corresponding total for the September quarter. During the quarter ended December, 1934, 206,527 tons were launched in Great Britain and Ireland, an increase of

23,105 tons, as compared with the previous quarter. Similar figures for abroad are 109,469 tons commenced, and 177,855 tons launched, showing a decrease, as compared with the previous quarter, of 71,708 tons in the tonnage commenced, and an increase of 51,480 tons in the tonnage launched.

Steam and motor oil tankers under construction in the world amount to 44 vessels of 338,070 tons, of which 13 vessels of 94,000 tons are being built in Great Britain and Ireland, eight vessels of 57,450 tons in Germany, six of 52,900 tons in Denmark, six of 40,270 tons in Holland, four vessels of 34,700 tons in Sweden, and two of 18,600 tons in the United States of America.

Of the 596,834 tons under construction in Great Britain and Ireland at the end of December, 294,137 tons consisted of motor-ships, while at the same date the motor-ship tonnage being constructed abroad (404,631 tons) was 155,729 tons in excess of that of the steamers.

The vessels being built in the world at the end of December include seven steamers and 21 motor-ships of between 8,000 and 10,000 tons each; three steamers and 19 motor-ships of between 10,000 and 20,000 tons; and four steamers and two motor-ships of 20,000 tons and upwards.

The table respecting marine engines shows that the horse-power of steam engines now being built or being fitted on board amounts to about 749,000 h.p.; this figure includes 57 sets of turbine engines of about 647,000 shaft horse-power. The horse-power of the steam reciprocating engines (about 102,000 h.p.) amounts to 7.1 per cent. of the total horse-power of marine engines now being built in the world. The figures for oil engines aggregate approximately 697,000 h.p.

Tonnage to Lloyd's Register Class.—Of the merchant shipbuilding in hand throughout the world at the end of December, 883,190 tons, or nearly 71 per cent., are being built under the inspection of Lloyd's Register. Of this total, 549,818 tons, representing more than 92 per cent. of the tonnage being built there, are under construction in Great Britain and Ireland; while, of the tonnage being built abroad, 333,372 tons, or nearly 51 per cent., are being constructed under the inspection of Lloyd's Register.

\* Excluding Russia, for which no figures are available.

### Britain's Jubilee Fair.

London is sending most of the 1,550 exhibitors to Olympia and the White City for the British Industries Fair, which opens on February 18th. The London total is 756, according to the advance overseas edition of the catalogue.

Birmingham is next with 114, and Staffordshire third with 55. After them come Scotland (47); Yorkshire, apart from Sheffield (46); Lancashire, apart from Manchester (41); Manchester (35); Middlesex (29); Sheffield (25); the furniture makers of High Wycombe (24); Nottingham (20); Surrey (15); and Walsall (8).

Thirty of the 1,550 exhibitors have had stands at every Fair in London since the first of them was held in 1915 at the Agricultural Hall. In London alone the Fair of the King's Jubilee year will be six times as big as that war-time test of British enterprise. The stands would line the whole of the way from Buckingham Palace to Windsor Castle; and, apart from London, the Engineering and Hardware Section, which is being held at Castle Bromwich, Birmingham, from May 20th to May 31st, is so popular that last year's area of 345,000 sq. ft. has had to be increased by 120,000 sq. ft.

On each of the eleven days of the Fair there will be more people at Olympia and the White City than in a town of the size of Dundee or Swansea or Sunderland. Most of the foreign buyers will be from Holland, with Belgians second, and Germans, Danes, Frenchmen and Swiss next in order.

The Irish Free State leads among the countries within the Empire who are sending buyers, followed by Canada, India and South Africa.

The remarkable growth of the Fair may be gauged from the fact that the advance catalogue, which is being issued in nine languages, runs to 684 pages, or about 152,000 words.

### Additions to the Directorate of Henry Simon, Ltd.

Messrs. Henry Simon, Ltd., flour milling and handling engineers, of Cheadle Heath, Stockport, announce the appointment of four additional directors. They are: Mr. I. Hey, head of the Conveying and Silo Department; Mr. J. F. Lockwood, chief flour milling expert; Mr. J. W. Muirhead, commercial manager of the flour milling section, and Mr. C. H. Marsh, accountant. The appointments have been made on the principle of promoting to the Board the men who are in direct control of the chief sections of the business.

Mr. I. Hey has been with Messrs. Simon since 1923, but much of his service has been spent abroad. After the War, Mr. Hey studied at the Manchester College of Technology, where he graduated B.Sc. in 1922, and the following year presented a thesis for the degree of M.Sc. He was elected an Associate Member of the Institution of Mechanical Engineers in 1928. He was personal assistant to the Managing Director, Mr. C. Bentham, afterwards representing Messrs. Simon in Saigon, Cochin China.

Mr. Hey was appointed a director of Messrs. Simon's Argentine Company in 1927, with headquarters at Buenos Aires, becoming managing director the following June. He was responsible for the carrying out of a number of important contracts in South America for granaries and flour mills. Further, he was in charge of the work in the Argentine in connection with the building and equipment of the 80,000-ton granary at Bahia Blanca for the Buenos Aires Great Southern Railway Company. This important contract was successfully completed and handed over in June, 1932.

At the beginning of 1934 he returned to England to take charge of the Conveying Department on the retirement of Mr. G. W. White. Mr. Hey has a wide knowledge of conveying, engineering and granary construction, and his experience will undoubtedly prove of great value in this important section of Messrs. Simon's business.

### Shanghai now able to take larger Liners.

Another important chapter was added to the history of the Port of Shanghai as one of the five greatest ports in the world, when the "Majestic," 21,000-ton Cunard-White Star liner, was berthed recently for the first time on the Shanghai side of the river at Shanghai and Hongkew Company's Hongkew Wharf. In previous years it was impossible to bring the larger liners, which visit this port, to the Shanghai side of the river close to the centre of the city, because there was no wharf of sufficient length, the fairway on the Shanghai side of the river was not wide enough, and also there was insufficient depth.

The great advantage of the vessels berthing on the Shanghai side is that it does away with the necessity of incoming and outgoing tenders. Passengers can embark and disembark from the liners just when they please, and from the wharf to the Bund is only a matter of fifteen minutes by car.

## Traffic at the Panama Canal Ports of Balboa and Cristobal during the Fiscal Year ended 30th June, 1934



*Atlantic Terminal, Panama Canal. Coaling Station, Cristobal.*

The terminal ports of the Panama Canal at Balboa and Cristobal are equipped to handle cargo for transshipment. Following the development of this facility, the ports have become receiving and distributing centres for cargo from and to overseas areas and Central and South America. Cargo consigned "Canal Zone for Orders" for destination beyond the Isthmus is held on the piers under a bonded warehouse arrangement until disposition by the owner, when it is transhipped to its final destination. During the fiscal year ended June 30th, 1934, a total of 12,163 tons of cargo was transhipped at Balboa and 332,912 tons at Cristobal.

Vessels transiting the Canal must of necessity enter and clear the terminal ports. The following table shows the number of commercial ships transiting the Canal during the year ended June 30th, 1934, with the Panama Canal net tonnage and the cargo tonnage, segregated by nationality:—

Nationality.	No. of Ships	TONNAGE	
		Panama Canal Net	Tons of Cargo
British ...	1,208	6,831,307	5,193,136
Chilean ...	7	26,680	21,989
Colombian ...	1	307	—
Danish ...	135	636,831	533,262
Danzig ...	70	559,101	575,125
Finnish ...	7	31,811	25,560
French ...	92	509,467	430,668
German ...	301	1,059,731	962,218
Greek ...	13	54,026	60,799
Honduran ...	9	432	183
Italian ...	68	478,429	256,465
Japanese ...	258	1,418,305	1,510,916
Mexican ...	1	—	—
Netherland ...	91	535,315	403,451
Norwegian ...	450	2,236,955	2,080,833
Panamanian ...	383	287,187	150,667
Peruvian ...	14	17,823	9,104
Russian ...	3	1,559	—
Spanish ...	1	—	—
Swedish ...	122	569,495	766,921
United States ...	2,269	13,225,698	11,578,453
Venezuelan ...	12	10,156	7,221
Yugoslav ...	18	80,980	151,680
Fiscal Year 1934	5,538	28,566,595	24,718,551

One thousand one hundred and sixty-five of these ships handled cargo or passengers at Balboa and 1,402 at Cristobal.

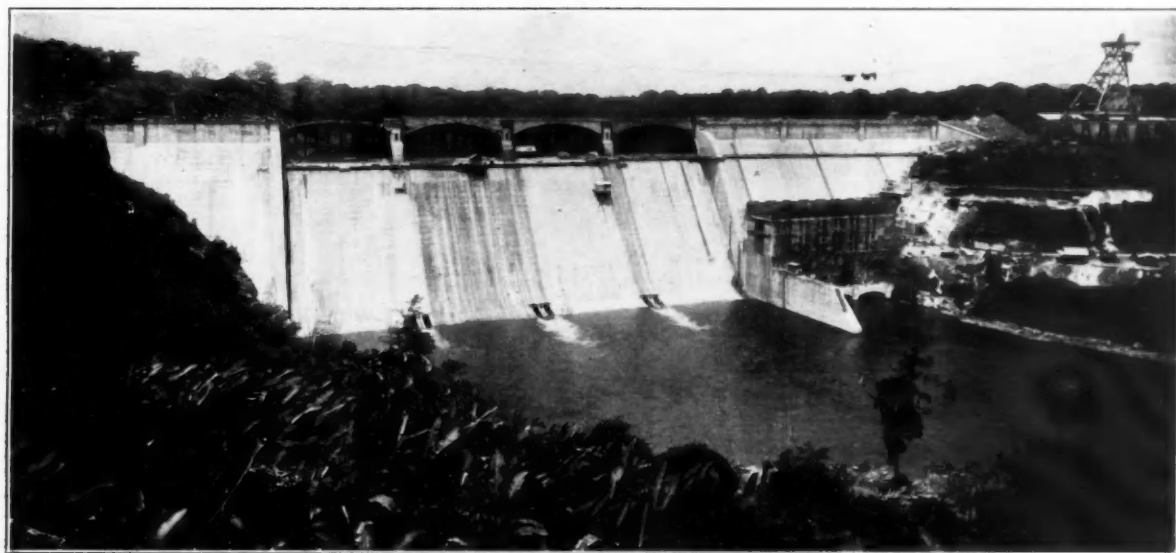
In addition to the 5,533 ships transiting the Canal during the year, there were 204 that called at Balboa and 785 that called at Cristobal which did not transit the Canal, as shown in the following table showing the number, nationality and net tonnage at each port:—

Nationality	BALBOA		CRISTOBAL	
	No.	Net Tonnage	No.	Net Tonnage
British ...	12	33,127	94	529,013
Canadian ...	—	—	2	2,395
Colombian ...	1	1,330	41	5,896
Costa Rican ...	—	—	1	19
Danish ...	—	—	2	2,355
Ecuadorian ...	1	259	—	—
French ...	—	—	31	184,976
German ...	2	4,207	53	316,903
Honduran ...	—	—	53	165,256
Italian ...	—	—	4	62,680
Japanese ...	19	53,916	—	—
Netherland ...	—	—	62	303,627
Nicaraguan ...	—	—	2	85
Norwegian ...	6	18,560	13	44,694
Panamanian ...	4	646	40	1,501
Peruvian ...	6	5,391	—	—
Spanish ...	—	—	17	94,120
Swedish ...	—	—	5	51,540
United States ...	153	285,669	364	1,228,697
Venezuelan ...	—	—	1	520
Totals	204	403,105	785	2,994,277

Fourteen commercial aircraft entered the Port of Balboa and 484 entered the Port of Cristobal during the year.

At Balboa 2,882,333 tons of miscellaneous local cargo and 104,014 tons of oil were received and 21,126 tons of local cargo shipped. At Cristobal 137,797 tons of miscellaneous local cargo, 31,131 tons of coal and 452,882 tons of oil were received and 56,434 tons of local cargo shipped.

The total number of passengers disembarking at Balboa during the year was 4,236, and those embarking numbered 4,644; at Cristobal the number disembarking was 12,410, and those embarking numbered 11,819.



*Madden Dam Project, Panama Canal.*

## News from all Quarters

### South Africa

The traffic through the main ports of South Africa for the month of October, 1934, will be seen from the following table:

No. of Ships ...	Cape Town 176	Port Elizabeth 83	East London 98	Durban 611
Freight in Tons				
Unloaded ...	112,799	52,172	32,224	143,041
Loaded ...	52,581	17,890	4,834	323,958
Re-loaded ...	1,051	79	43	2,872
Total ...	166,431	70,141	37,111	469,871

Working day and night, in three shifts, 1,000 men will soon be labouring at Table Bay docks on a highly-important scheme of alteration and development. It is believed that the plan, which has been devised after consideration of the Nijhoff Commission's report, will cost £800,000, and will include the building of a berth about 1,000 ft. long at the knuckle of the new basin, costing £500,000, and the creation of fruit pre-cooling chambers, which will be the largest in the world, costing £300,000.

The work will be put in hand within a month or so, and will be completed in little more than a year if the new Union Castle liners now being built are to be accommodated.

Mr. J. F. Craig, harbour advisory engineer to the Union Government, declined either to confirm or to deny the reports of this development scheme, and said that no information had reached him from the administration's headquarters, where the Nijhoff report is being considered.

From well-informed sources, however, it appears that, while details remain to be settled, the administration has decided that there can be no more delay, and the Nijhoff suggestions have been considerably amended in order to speed up and lessen the cost of the development needed for the immediate future.

It is probable, however, that these extensions will lead to others even more ambitious, and that employment will be found for about 1,000 men for considerably more than one year.

It is freely stated that there is a considerable cleavage of opinion between the views of the Nijhoff Commission and those of the Union Government's technical advisers, and that whatever scheme of development has been settled, it differs considerably from that proposed by the former.

Mr. Nijhoff, it is stated, wished to improve certain berths in the Victoria Basin, the main part of the present harbour, but other experts argued that, even if this were done, the long, deep-draught liners could still not be safely berthed, particularly in a south-easter.

A berth, 1,000 ft. long, will be built to accommodate the new liners, and it is believed that the Union Castle Company has been asked to arrange its sailings so that the two ships are not in Table Bay at the same time. Later, however, further deep-water berths will have to be built.

A proposal has been made that the new basin should be deepened at a cost of £50,000 to £60,000. About 150,000 cub. yds. of submarine rocks would have to be broken with the aid of modern rock-breaking and dredging floats with giant pile-drivers.

Eventually, this may have to be done, for at present the new basin, which cost £2,700,000, is scarcely being employed at all, and unless more berths in it are deepened about one-third of the harbour will remain impracticable for any ships of large tonnage.

### Portuguese East Africa

In the year 1933, the harbour of Lourenço Marques was visited by some 50 sea-going vessels, most of which also called at the other ports of the colony. During the year the various coastal ports were visited by some 650 ocean-going ships. In the following table those which visited several of the harbours of the colony are counted separately for each harbour.

	No. of Ships		Total Tonnage in 1000 B.R.T.	Cargo in Tons	
	Total	Ocean- going Vessels		Unloaded	Loaded
Lourenço Marques ...	757	615	4,059	448,632	347,340
Mocimboa ...	425	108	918	26,451	45,317
Porto Amelia ...	93	35	363	2,644	5,617
Beira ...	590	417	2,978	157,372	305,571
Ibo ...	41	3	67	323	3,258
Mocimboa da Praia ...	36	9	94	344	2,573
Quelimane ...	120	1	164	7,003	19,627

The traffic in the harbour of Lourenço Marques increased in 1933 by about 60 arrivals over the previous year's figure, due to the increased activity of the gold mines of the Union of South Africa. In the Port of Beira the overseas traffic remained on about the same level as during the previous year, but decreased slightly in the other harbours. The coastal traffic, however, decreased or remained on the same level in most of the harbours, with the exception of Chinde, where it increased.

### Canada

The number of vessels visiting the Port of Montreal during the 1934 navigation season showed an increase of 36.4 per cent. over the previous year. The ocean-going ships numbered 1,636, compared with 1,000, but in coastal shipping the number was 819, as against 415. The 1934 total, therefore, was 1,855, as against 1,475 vessels.

Exports through the Port of Saint John for the eleven months ended November 30th, 1934, exceeded by almost 100,000 tons the exports for the entire year of 1933. For the eleven-month period of 1934, exports amounted to 762,181 tons, as compared with 663,282 tons for 1933. In 1930, the heaviest year of the last five, 721,304 tons were exported.

### Peru

The new harbour of Callao, which was opened on the 24th of October last, is on the northern side of the Bay of Callao, and has an area of 645 acres. The moles are constructed of concrete, and finished off with a dressing of asphalt over their entire length. The new harbour is protected by two breakwaters, the northern one a mile and a quarter long, and the southern one with a length of five-eighths of a mile. Between these two breakwaters there is a harbour basin with about 1,200,000 sq. yds. of quiet water. The railway lines within the new harbour zone are already seven miles in length. The storage sheds which have been erected on the two central moles are floored with asphalt, and roofed with asbestos sheets, in order to maintain an even temperature.

### Brazil

In the harbour of Bahia the quay has been lengthened, and two new storage sheds are to be constructed. A new mechanical feed is to be provided, in order to permit the loading of sacks of cocoa direct from the sheds into the ships. That part of the harbour basin immediately in front of the new quay is to be deepened, but all ships with a draught of more than 24 ft. must still be loaded and unloaded in the roads.

The total number of ships entering the harbour of Bahia in the year 1933 was 2,834, as compared with 2,917 in 1932, and 2,991 in 1931. The number of sea-going vessels from foreign countries was 495, as compared with 466 and 499 in the two previous years. The number of ships clearing during same periods was 2,833, as compared with 2,904 and 3,002.

The following table gives the traffic in 1,000 r.t. for the years 1931-1933.

	1931	1932	1933
Ocean-going Traffic ...	2,401	2,387	2,653
Ships loading at the Quay	1,126	1,135	1,199
Ships loading in the Roads	1,275	1,252	1,454
Coastal Traffic ...	1,582	1,445	1,480
Total of Ocean-going and Coastal Traffic ...	3,983	3,832	4,133

In the year 1933, exports from the Port of Bahia totalled 120,991 tons, as compared with 116,671 tons in 1932, and 122,945 tons in 1931. Imports for 1933 amounted to 81,384 tons, as compared with 84,911 tons for 1932, and 73,268 tons for 1931.

The harbour of Ilhéos, in the south of the State of Bahia, plays an important part in the export of cocoa, which is shipped principally on Swedish vessels. The entrance to the harbour has lately been made more difficult by the silting up of the river. A Swedish steamer, carrying a cargo of 24,000 sacks of cocoa, was the last large vessel to enter the harbour, since when it has been practicable only for vessels with a draught of less than 12 ft. Most of the coastal steamers of the Brazilian companies have temporarily suspended traffic. Dredging operations are being carried out for rendering the harbour navigable again, but in the meantime traffic will be diverted to Bahia.

The Government has lately concluded an agreement with the Rio de Janeiro Harbour Company, whereby it is to take over control of the port. It has been proposed by the Santos Docks Company that the Rio de Janeiro port charges should be increased in order to bring them into line with those of Santos. It is, moreover, believed that the Santos Docks Company intend to take over the control of the harbour from the Government.

### Japanese Possessions

The number of ships entering the harbour of Dairen during the third quarter of 1934 was 1,034, with a total tonnage of 1,931,373 r.t. The total imports for this period amounted to 760,443 tons, an increase of 6,105 tons over the second quarter of the year. The total exports amounted to 1,384,958 tons for the third quarter of 1934, a decrease of 272,866 tons from the figure for the second quarter of the year.